



CITY OF ABERDEEN.

Report

BY THE

MEDICAL OFFICER OF HEALTH

FOR THE YEAR

1905.





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POPULATION.

(Table I.)

As estimated by the Registrar-General from the census of 1901 and the previous census of 1891, the population of the city, at the middle of 1905, was 167,537, whereof 67,062 persons were in the St. Nicholas division, including Torry; and the remainder—100,475—were in the St. Machar division, including Old Aberdeen and Woodside. The population in the preceding year was similarly estimated at 164,124. The increase, according to these estimates, amounts to 3,413. I am of opinion, however, judging from the increase in the Voters' Roll, that these estimates are too high, and that the population at the middle of 1905 did not exceed 165,000. It is probable that the addition to the population in 1905 was scarcely more than one-half of the estimate of the Registrar-General. The city has been suffering for some time from depressed trade, which is materially reducing the rate of growth of the population.

In order to avoid discrepancy with certain of the rates as published by the Registrar-General, the rates for births, marriages, and deaths in the Tables accompanying this report are calculated on the population as estimated by him. This means that the rates given are probably lower than the actual rates, by about 1·5 per cent. Thus the total death-rate for the year, instead of being 15·63, is probably nearer 15·86.

BIRTH-RATE.

(Table II.)

The total number of births during the year was 4,892, or at the rate of 29·2 per 1,000 of the population. In the preceding year the births amounted to 4,885, equivalent to a rate of 29·8. The birth-rate of last year is the lowest recorded since civil registration came into full operation. Thirty to forty years ago the average rate was almost exactly 7 per 1,000 higher than last year. In other words, there were 1,150 to 1,170 fewer births in the city last year than there would have been had the rate not undergone this large decrease. But, as I remarked in last year's report, this large decrease in births is more than compensated for by the decline in deaths.

The fall in the birth-rate since the preceding year was wholly confined to the St. Machar division of the city. In the St. Nicholas division there was an increase. The rate in the former division is much higher than in the latter division, and is declining more rapidly, from which—owing to the differences in the social constitution of the population of the two divisions—it may be inferred that the birth-rate is decreasing more rapidly among the upper classes than among the working classes.

TABLE I.—POPULATION OF ABERDEEN IN 1905.

	Estimated Population. — 1905.	PER-CENTAGE OF POPULATION AT EACH AGE PERIOD, Calculated from Census, 1891.					
		Under 1 year.	0—5 years.	5—15 years.	15—25 years.	25—60 years.	Above 60 years.
ST. NICHOLAS AND TORRY .	57,062	2·95	13·37	23·54	20·10	35·76	7·23
ST. MACHAR (Incl. Woodside and Old Aberdeen).	100,475	2·46	11·46	22·23	21·65	35·86	8·80
Whole City	167,537	2·67	12·26	22·79	21·00	35·81	8·14

TABLE II.—BIRTH, DEATH, AND MARRIAGE RATES IN ABERDEEN,
Per 1,000 of Population.

Year.	Births.			Deaths.			Marriages.		
	St. Nicholas.	St. Machar.	City.	St. Nicholas.	St. Machar.	City.	St. Nicholas.	St. Machar.	City.
1905	35·0	25·4	29·2	19·0	13·4	15·6	12·6	5·3	8·2
1904	34·2	26·8	29·8	20·6	15·0	17·2	14·0	5·9	9·2
1903	35·9	27·7	31·0	21·1	14·4	17·0	14·2	5·6	9·1
1902	35·4	27·2	30·5	22·1	15·1	17·9	14·1	5·7	9·1
1901	37·0	27·0	31·0	21·6	16·0	18·2	13·3	5·9	8·9
1900	37·8	27·9	31·8	23·7	15·9	19·0	14·0	5·6	9·0
Mean of 1900-1904	36·1	27·3	30·6	21·8	15·3	17·9	13·9	5·7	9·1
1899	38·0	27·7	31·9	22·6	15·5	18·4	13·9	6·7	9·6
1898	39·7	28·8	33·3	24·3	15·5	19·1	15·0	6·1	9·7
1897	38·7	28·8	32·8	22·5	14·7	17·9	14·3	6·2	9·5
1896	37·6	29·3	32·7	22·7	15·1	18·2	14·3	6·4	9·7
1895	38·2	28·7	32·8	25·5	17·7	21·1	13·4	5·7	9·0
Mean of 1895-99	38·4	28·7	32·7	23·5	15·7	18·9	14·2	6·2	9·5
Mean of 1886-95	35·4	29·5	32·2	22·7	17·4	20·0	11·1	5·7	8·1
1876-85	...	...	34·4	...	...	20·4	...	...	7·8
1866-75	...	...	36·2	...	...	23·0	...	...	8·2

MARRIAGE-RATE.

(Table II.)

During the year there were 1,374 marriages within the city, equivalent to a rate of 8.2 per 1,000 of population. In the preceding year there were 1,510 marriages, with a rate of 9.2. The rate last year is the lowest since 1893, and is doubtless caused by the industrial depression.

The marriage-rate in the St. Nicholas division of the city was more than twice as high as the rate in the St. Machar division, but this is largely due to the principal halls, in which many of the marriages are celebrated, being situated within the former division. It is also considerably affected by the presence in this division of several of the leading churches.

DEATH-RATE.

(Table II.)

The total number of deaths during the year was 2,618, equal to a death-rate of 15.63 per 1,000 of the population. In the preceding year the deaths amounted to 2,826, giving a death-rate of 17.2. Even allowing for the death-rate during the past year being unduly lowered, say, to the extent of 0.25, by a probable over-estimation of the population on which the rate is calculated, the rate is decidedly the lowest on record. The next lowest rate was 17.00, in 1903, followed by 17.22 in 1904. Compared with the average rate thirty to forty years ago, the rate for last year was very slightly over two-thirds of that rate. This represents an enormous saving of lives within a comparatively short period. If the rate last year had remained as high as in those earlier years, there would have been 3,853 deaths in place of 2,618—or an increase of 1,235. The low death-rate for the past year is the more gratifying as the year opened amid the gloom of a virulent—though, fortunately, not an extensive—epidemic of typhus. One of the principal factors in the low general mortality was the restrained prevalence of the more common infectious diseases, but it was not the sole factor.

ANALYSIS OF THE DEATH-RATE.

(a) *Mortality in Relation to Age (Tables III., IV., and V.).—Infantile Mortality.*—It is satisfactory to find that, in contrast with the rate of the preceding year, the death-rate among infants under one year of age (151.6 per 1,000) during the past year exhibited a substantial decline, and was the lowest recorded for at least twenty years. It is still, however, too high. It is not creditable to the community that every sixth or seventh baby—altogether 678 babies, or about two a day—should have died during the year. This represents a deplorable waste of life at its threshold. Some of it—maybe as much as a third—is unavoidable, and could not be prevented by the most careful and sensible of mothers. Some children are born prematurely, some suffer from developmental defects, and some, though not many, are born diseased; and these often succumb even where much skill and care have been devoted to them. Another third of the waste is, I believe, avoidable, but difficult to avoid when due allowance is made for the varied social and domestic circumstances of the thousands of households composing a large town. There is the mother who because of a sickly or drunken husband must engage in outside work in order to feed her hungry children, and none of the children suffer more than the baby from the enforced absence of the mother; there is even

TABLE III.—DEATHS AT VARIOUS AGE-PERIODS FROM VARIOUS CAUSES.
Year 1905.

AGE.	ALL CAUSES.	Zymotic Diseases.				Tubercular Diseases.		Diseases of						Malignant Diseases.	Developmental Diseases (ex. old age)	Accident and Violence.	Debility, Atrophy, Inanition.		Miscellaneous.
		Miasmatic.	Diarrhoeal.	Veneal.	Septic.	Phthisis.	Other Tubercular.	Respiratory System.	Circulatory System.	Urinary System.	Nervous System.	Digestive System.	Under age of 1 year.				Above age of 60 years.		
WHOLE CITY.																			
Under 1 year,	678	37	88	19	3	1	17	131	11	1	53	40	0	168	12	69	...	28	
Under 5 years,	904	90	102	20	3	8	46	213	13	2	71	48	0	169	17	70	...	32	
5—15 „	108	6	1	0	0	12	31	12	10	3	8	10	1	...	7	...	...	7
15—25 „	130	5	1	0	1	56	8	7	10	4	10	9	2	...	6	...	...	11
25—60 „	636	18	3	4	12	119	10	91	97	23	90	36	60	...	29	...	...	44
60 + „	840	20	2	0	6	8	1	146	202	37	160	38	82	...	13	...	92	33	
ALL AGES,	2618	139	109	24	22	203	96	469	332	69	339	141	145	169	72	...	...	127
ST. NICHOLAS (including Torry).																			
Under 1 year,	411	22	56	12	2	1	11	80	2	1	31	25	0	99	7	44	...	18	
Under 5 years,	551	60	64	12	2	6	26	128	3	2	41	31	0	99	12	45	...	20	
5—15 „	64	4	1	0	0	7	17	6	5	1	3	9	1	...	7	...	...	3
15—25 „	56	3	1	0	1	20	3	4	5	2	3	6	0	...	3	...	...	5
25—60 „	299	15	0	3	6	48	5	49	44	13	31	16	29	...	17	...	...	23
60 + „	304	7	0	0	4	1	1	61	67	11	56	17	34	...	7	...	22	16	
ALL AGES,	1274	89	66	15	13	82	52	248	124	29	134	79	64	99	46	...	...	67
ST. MACHAR (including Old Aberdeen and Woodside).																			
Under 1 year,	267	15	32	7	1	0	6	51	9	0	22	15	0	69	5	25	...	10	
Under 5 years,	353	30	38	8	1	2	20	85	10	0	30	17	0	70	5	25	...	12	
5—15 „	44	2	0	0	0	5	14	6	5	2	5	1	0	...	0	...	...	4
15—25 „	74	2	0	0	0	36	5	3	5	2	7	3	2	...	3	...	...	6
25—60 „	337	3	3	1	6	71	5	42	53	10	59	20	31	...	12	...	...	21
60 + „	536	13	2	0	2	7	0	85	135	26	104	21	48	...	6	...	70	17	
ALL AGES,	1344	50	43	9	9	121	44	221	208	40	205	62	81	70	26	...	...	60

TABLE IV.—DEATH RATES AT VARIOUS AGE-PERIODS FROM VARIOUS CAUSES
(per 100,000 of population at each age.)—Year 1905.

AGE.	ALL CAUSES.	Zymotic Diseases.				Tubercular Diseases.		Diseases of						Malignant Diseases.	Developmental Diseases (ex. old age)	Accident and Violence.	Debility, Atrophy, Inanition.		Miscellaneous.
		Miasmatic.	Diarrhoeal.	Venereal.	Septic.	Phthisis.	Other Tubercular.	Respiratory System.	Circulatory System.	Urinary System.	Nervous System.	Digestive System.	Under age of 1 year.				Above age of 60 years.		
WHOLE CITY.																			
Under 1 year,	15158	827	1967	425	67	22	380	2929	246	22	1185	894	0	3757	268	1543	...	626	
Under 5 years,	4401	438	497	97	15	39	224	1037	63	10	346	234	0	823	83	341	...	156	
5—15 „	283	16	3	0	0	31	81	31	26	8	21	26	3	0	18	...	...	18
15—25 „	369	14	3	0	3	159	23	20	28	11	28	26	6	0	17	...	...	31
25—60 „	1060	30	5	7	20	198	17	152	162	38	150	60	100	0	48	...	...	73
60+ „	6160	147	15	0	44	59	7	1071	1481	271	1173	279	601	0	95	...	675	242	
ALL AGES,	1563	83	65	14	13	121	57	280	198	41	202	84	87	101	43	...	...	76
ST. NICHOLAS (including Torry).																			
Under 1 year,	20653	1106	2814	603	101	50	553	4020	101	50	1558	1256	0	4975	352	2211	...	905	
Under 5 years,	6145	669	714	134	22	67	290	1428	33	22	457	346	0	1104	134	502	..	223	
5—15 „	405	25	6	0	0	44	108	38	32	6	19	57	6	0	44	...	...	19
15—25 „	415	22	7	0	7	148	22	30	37	15	22	45	0	0	22	...	...	37
25—60 „	1247	63	0	13	25	200	21	204	183	54	129	67	121	0	71	...	...	96
60+ „	6268	144	0	0	82	21	21	1258	1381	227	1155	351	701	0	144	...	454	330	
ALL AGES,	1900	133	98	22	19	122	78	370	185	43	200	118	95	148	69	...	...	100
ST. MACHAR (including Old Aberdeen and Woodside).																			
Under 1 year,	10753	604	1289	282	40	0	242	2054	362	0	886	604	0	2779	201	1007	...	403	
Under 5 years,	3066	261	330	69	9	17	174	738	87	0	261	148	0	608	43	217	...	104	
5—15 „	197	9	0	0	0	22	63	27	22	9	22	4	0	0	0	...	...	18
15—25 „	340	9	0	0	0	165	23	14	23	9	32	14	9	0	14	...	...	28
25—60 „	935	8	8	3	17	197	14	117	147	28	164	56	86	0	33	...	...	58
60+ „	6062	147	23	0	23	79	0	961	1527	294	1176	238	543	0	68	...	792	192	
ALL AGES,	1338	50	43	9	9	120	44	220	207	40	204	62	81	70	26	...	...	60

TABLE V.—MORTALITY FROM ALL CAUSES AT VARIOUS AGE-PERIODS
(per 1,000 of population at each age.)

Year.	AGE PERIOD.						All ages.
	Under 1 year.	0—5 years. (Infant Period.)	5—15 years. (School Period.)	15—25 years. (Adolescent Period.)	25—60 years. (Mature Period.)	60 years and upwards. (Post-mature Period.)	
1905 . .	151·6	44·0	2·8	3·7	10·6	61·6	15·6
1904 . .	167·2	54·7	3·0	3·5	11·1	62·9	17·2
1903 . .	157·2	49·7	2·8	4·6	11·8	62·7	17·0
1902 . .	156·5	48·4	2·8	5·2	12·8	69·4	17·9
1901 . .	176·5	52·2	3·4	5·1	12·4	68·3	18·2
1900 . .	177·8	54·4	3·0	4·9	14·0	68·9	19·0
Mean of 1900-1904	167·0	51·9	3·0	4·7	12·4	66·4	17·9
1899 . .	171·3	55·0	2·9	5·6	12·6	64·7	18·4
1898 . .	196·4	62·8	3·8	4·8	12·1	64·1	19·1
1897 . .	173·8	52·5	3·3	5·5	12·0	64·6	17·9
1896 . .	157·3	52·2	4·6	5·1	12·9	62·3	18·2
1895 . .	205·7	70·9	4·6	6·1	12·9	67·9	21·1
Mean of 1895-99	180·9	58·6	3·8	5·4	12·5	64·7	18·9
Mean of 1886-95	168·5	53·8	4·6	6·3	12·8	68·1	20·0
1876-85 . .	144·9	52·0	5·7	6·9	13·5	69·9	20·4
1866-75 . .	146·2	59·4	7·4	6·0	18·7	72·3	23·0

the worse case for the infant where the mother herself drinks, and becomes heedless of the claims of her infant and the whole household; there is the mother in indifferent health, who is overpowered by the cares and labours of a large family, and who finds it difficult to tend her baby as she should; there is the unmarried mother, whose baby has often to be entrusted to the care of strangers; and then there are every year a few unfortunate infants whose mothers have perished at or soon after child-bed. For all the babies born in such circumstances, if reasonably healthy at birth, it is not impossible, though exceedingly difficult, under present social and legal conditions to devise means by which their lives might be preserved; and it may be necessary at some future time for the State, in face of a constantly declining birth-rate, to make a special effort to save much of this wasted infant life; but, meanwhile, not much can be done. The remaining third of the total waste of infant life is, I believe, easily preventible, and, accordingly, ought to be prevented. The remedy is the education of mothers, and especially of young women, who have not yet fallen into traditional bad ways in the rearing of infants. For this last cause of waste is due chiefly to ignorance—and, unluckily, as in most matters of the kind, not the ignorance of the frankly know-nothing type, but the ignorance of the person whose mind is already contentedly occupied with false knowledge. An illustration of the latter type is to be found in the mother who could not understand how her baby of a few months old died, as he was a splendid baby—able to eat everything. This ignorance can best be dispelled by suitable provision by the community for the proper training of young women, of a suitable age, at evening continuation schools, in the hygiene of infant life and domestic life generally. It is so important that it should be made obligatory. This is the most important branch of the technical training of women; and technical education is just as necessary and as beneficent for women in their own sphere as for men. In such instruction, as practically all authorities now agree, there lies the surest road to success in bringing infantile mortality within reasonable bounds.

At the same time it is desirable to make some efforts to reach the mothers of the present by the help of female health visitors. I am glad to be able to report that the female sanitary inspector or health visitor appointed by the Town Council three years ago has done good work in this direction, although it will naturally take a little time before its full effect will be seen. It may not be too much to claim that part, at least, of the reduction in the infantile mortality during the past year is the outcome of her labours. She was able to give only a portion of her time to visiting mothers, as she had also to see to other duties, especially in regard to domestic cleanliness; but now, with the additional health visitor recently appointed, it will be possible for much more infant work to be done. Indeed, as this work is now arranged, an effort is being made to reach all mothers where instruction is believed to be more pressingly needed. But it is scarcely enough in many cases that a mother should be visited once or twice or thrice. Some require frequent visits over a prolonged period in order to make sure that they make no serious mistakes, or lapse into wrong habits in feeding and tending their babies. There is ample scope, therefore, for the services of even a third health visitor, more especially as one of the existing two visitors has to give a large part of her time to domestic cleanliness—another important branch of sanitary work.

In dealing, in my report of a year ago, with this question of infant hygiene, I emphasised the need for pure and clean milk in feeding bottle-fed infants, and especially for the use of thoroughly cleansed bottles and teats—without tubes. One of the chief dangers is the employment of bottles with rubber tubes. They are more convenient in feeding than tubeless bottles,

and do not require to be held, as tubeless bottles do, in the hand of the mother while the baby is being fed. The tubes are, however, exceedingly difficult to keep clean, and are often lined with putrid, curdled milk, swarming with countless millions of germs, and, therefore, most dangerously pollute each draught of milk. Hence the frequent stomach and bowel illnesses of bottle-fed infants. About the middle of the present year I made inquiry at various druggists in town to ascertain what proportions of tube and tubeless bottles were being sold. I found, beginning with the two principal wholesale druggists, whose sales extend, of course, over a large area of the surrounding districts as well as within the city, that one of them estimated his sale of tubeless bottles to be about one fourth of his total sale of feeding bottles, while the other reckoned the proportion, in his case, to be only one-tenth. As regards the retail shops, the experience varied greatly with the district of the city, tubeless bottles being much more in use among the better classes than among the poorer classes. For example, at two of the principal "west-end" shops we were told that the old-fashioned tube-bottle was now rarely asked for, whereas in two typical "east-end" shops we learned that nine-tenths of the bottles sold were tube-bottles. But the proportion did not consistently vary with the character of the district. For example, at a shop in a poor district in the heart of the city, both forms of bottles were said to be in nearly equal demand; but this shop is near to the Dispensary, and its customers may have been largely influenced by advice received there. It was more surprising to learn from one of the principal shops in the Rosemount district—a district with no slums and largely inhabited by the well-to-do working classes, that "a gross of the old bottles were sold to a dozen of the new." Very much the same reply was obtained at the principal shop in Torry, which is inhabited almost wholly by well-to-do working classes. In the King Street part of the city, which, in its residential character, is not to be placed above Rosemount, it was satisfactory to find that tubeless bottles were at some of the shops nearly as often asked for as tube-bottles.

It is plain that there is great room for improvement; and the improvement would doubtless be greatly hastened if both doctors and druggists were to make a point in every case of advising the use of the tubeless bottle. If druggists would not object, it would probably be helpful if there were hung up in a conspicuous place in each shop a notice by the Public Health Department recommending the exclusive use of tubeless feeding bottles.

As to the purity of the milk before it is placed in the bottle, this concerns persons of all ages as well as babies, although babies suffer most from impure milk. As is well known, several towns are experimenting with sterilising depots for milk for infants, and fairly good results appear to be got; but as the milk is dearer than unsterilised milk, and not so conveniently procurable, it is rarely obtained for the infants who need it most—the infants of the very poor and of the careless mothers who dislike bother. To be effective, the depots could require to be empowered to supply the milk, in many cases, at less than cost price. It is understood that the President of the Local Government Board is favourable to Local Authorities being invested with full powers to institute such depots, and to sell or supply the milk on whatever terms they may consider suitable.

Meanwhile there is no difference of opinion as to the necessity for every possible care being taken at the farm and the dairy—in the production, transmission, and sale of milk, in drawing the milk from healthy cows only, in keeping the cows clean, and in adopting methods of the utmost cleanliness at every stage in the milk supply. If this is done, experience has shown that milk can be produced, on a commercial basis, of such quality that

there is little call for sterilisation. There is no better sanitary object on which any community could set its heart than the realisation of such a milk-supply. Like many other sanitary reforms, it will take years to accomplish completely, but it appears to me that the time is ripe for, at any rate, some fresh steps towards this ideal. One important step would be licensing, in place of registering, dairies. This is now being universally recognised as desirable, and Parliament, it is hoped, may soon see its way to make the necessary change. A licence implies the power on the part of the licensing authority to refuse, unless the required conditions are complied with. Under the present system of registration, every dairy, however, unsuitable, can claim to be registered. But the chief benefit, perhaps, in a system of licences would be felt if a licence was required by a dairyman from every Local Authority within whose district he sought to vend his milk. The Local Authority of a town could thus state to the dairyman or farmer from outside the town the terms on which his milk would be admitted for sale within the city, and could stipulate as to the inspection of his dairy in the interest of the consumers by an inspector appointed by the Local Authority.

Until Parliament grants such a power, there is nothing, so far as I know, to prevent the Town Council instituting a list or register of all dairymen who agree to comply with certain reasonable requirements to be laid down by the Council, and who are willing to allow their farms to be visited and examined from time to time by the veterinary inspector of the Council in order to see that the requirements are attended to. The arrangement would have no legal basis, but the inducement to the dairyman would be that his name would appear in a list to be kept at, say, the Sanitary Office. This list would be open to any citizen who wished to make sure that his milk-supply was being produced under satisfactory conditions and from cows free from obvious disease. With so important an article of food as milk, and one so extensively used, any reasonable means by which the standard of its purity can be raised is well worthy of consideration, even although it should not be found to be generally applicable. There are several reputable dairymen for whom the spur of such control is not necessary, but there are others who are less careful, and for whom some stricter control than exists at present would be to the distinct advantage of the consumer, and, I think, in the long run to the advantage of the dairyman himself. A recent decision in an important English case shows that the law is disposed to lay on a dairyman the responsibility for illness arising among his customers from the supply of contaminated milk. In this case typhoid fever was alleged to have been thus transmitted, and the allegation being substantiated in Court, damages amounting to several hundred pounds were awarded against the dairyman. A dairyman ought, therefore, to welcome any supervision which may assist him in reducing such a serious financial risk.

I am glad to be able to report that during the past year an effort was made by the Public Health Committee to bring about some such system of supervision by the city of all dairies supplying it with milk. On the invitation of the Committee, a conference took place in the Town-House between delegates from the Committee and a large number of representative dairymen, the main subject of the conference being a proposal by the Committee to provide, at the expense of the Town Council, in the interests of the consumers, for the veterinary inspection of all dairies supplying milk to the city. The inspection was not to be obligatory, since there is no power to enforce it, but a list of the dairymen accepting it was to be open, as already suggested, to the inspection of the citizens. The proposal was approved by certain of the dairymen, and disapproved by others. The majority reserved their opinion, and, as was

made known subsequently, were desirous of learning to what extent tubercle occurred in the milk supplies of the city. I undertook to have some bacteriological tests made, under Professor Hamilton's guidance in the Bacteriological Department of the University. Some tests had been made on former occasions, the milks examined including milk from cows known to be suffering from indurations or lumps in the udder. The tests were made by the inoculation of guinea pigs, and revealed, as a rule, the presence of tubercle in the milk from the cows with indurations of the udder. In the more recent tests, samples of milk were procured by the Sanitary Inspector in the usual way, from the ordinary milk supplies of the city, including the supplies to the chief hospitals and public institutions, without reference to the condition of the cows from which the milk was derived. Twenty-seven different milks were thus examined—fifteen about the middle of last year and the remainder in the spring of the current year. The tests were made, as before, by inoculating guinea pigs with the centrifuged milk, 1 c.c. being used for each inoculation. In the case of two of the milks—one last year and the other this year—tuberculosis developed in the inoculated animal. In one of them, however, Dr. Laing, who conducted the experiments, is of opinion that the tuberculosis was probably due to natural causes. In the other, the tuberculosis was, in his opinion, undoubtedly due to infection from the milk. These opinions are confirmed by Professor Hamilton. From these tests, and from those formerly made, as also from the experience of the Veterinary Inspector in his examination of the cows within the city, there can be no doubt that cows with tubercular udders are to be met with here as elsewhere, although, perhaps, in smaller proportion than in some of the English Midland towns where similar tests have been made, but still in sufficient proportion to be decidedly dangerous. One cow with a tubercular udder in a herd will contaminate the whole mixed milk of the herd, and render it dangerous to susceptible infants and others among the consumers.

Several of the most eminent authorities in this country and on the continent are now maintaining that tubercle-infected milk is probably the chief source of tuberculosis, not only of the bowels—a form common in children—but also of the lungs and brain. They believe that the tubercular germs may be absorbed from the food in infant life, and may remain practically quiescent for years, and then in the stress and strain of adolescent and later years, when the vitality of the body becomes reduced, burst forth into fresh activity in the lungs, into which the germs have found their way from the glands and tissues around the bowels. In any case, whether these authorities be right or not as to this mode of producing pulmonary phthisis, every medical man is only too familiar with the abdominal form of tubercle in children. It is one of the commonest causes of wasting or pining among infants; and it has been clearly shown by many bacteriologists that the tubercle germs in such cases are absorbed from the food—in all probability, tubercle-infected milk mainly—by the intestinal wall, then multiply in the abdominal glands, which often increase greatly in size, and from there may spread to other parts of the body, sometimes to bones and joints as well as to organs, like the lungs and brain. For, as is well known to medical men, much of the disease of bones and joints, especially in children, is due to tubercle.

But tubercle is not the only form of contamination in milk. The matter or secretion from any form of disease of the udder can scarcely fail to be more or less harmful, especially to infants; and the healthiness of the milk is almost certainly affected by the general health of the cow, apart from the particular condition of the udder. It is a matter of frequent observation that the breast-fed infant is affected by changes in the general health of the mother.

Then there are the numerous and sometimes dangerous contaminations to which the milk of the cow is subject in the byre and dairy because of want of proper precautions. I believe that the skilled inspection and authoritative advice of the veterinary inspector would be of great service in diminishing, if not altogether removing, these various sources of contamination of milk. It is encouraging to find that since the conference between the Public Health Committee and the dairymen, certain of the leading dairymen have themselves arranged for regular veterinary inspection. What is required is that such inspection should be made general, and, in my opinion, that the inspection should, so far as practicable, be carried out by an inspector appointed by the Corporation as representing the consumers.

Mortality at "School" Age-Period (5-15 years).—The death-rate at the "school" age-period (5-15 years) was 2·8 per 1,000 during the year, and is lower than in the preceding year, although not lower than in 1902 and 1903, in each of which years it was also 2·8. As has been remarked in previous reports, no age-period has exhibited so great a reduction in its mortality. The mortality is now only a little more than one-third of what it was thirty to forty years ago. Several causes have been operative, but probably one of the most potent has been the great improvement in these years in the hygienic conditions of school life. The schools of Aberdeen are in many respects model schools. On the hygienic side, however, in order to complete their arrangements, they still require, and, in my opinion, urgently require provision for the medical inspection of the children. I believe it could be done efficiently for about £1,000 a year, and would yield a return in health of a value far in excess of the expenditure. Teachers would have medical assistance constantly at hand in determining the presence or nature of suspected infectious cases, not merely of the ordinary zymotics, but of eye and skin diseases, phthisis, and the like. Serious, though previously unsuspected or unrecognised, diseased conditions of heart, lungs, spine, throat, &c., might be discovered at curable stages, and the children referred to the home doctor for treatment. Defects of eye-sight and hearing would be ascertained, and steps taken, so far as possible, to secure their remedy; and due allowance would be made by teachers for such defects. Unhealthy habits in breathing and bodily attitude would also be noticed and checked. Medical inspection is certain to come. It has for years been in use in the United States, France, Germany, and several other countries, and everywhere its advantages are fully attested. It is now introduced into several towns in our own country, and definite provision is made for it in the present English Education Bill. Why should Aberdeen not help in leading the way?

Reference has been made in previous reports to the need for a larger provision for play or recreation ground for children. The time will come, with the progress of public opinion in matters of health, when the present somewhat general apathy in regard to such provision will be deplored. In an ideal town, every child should have, within easy reach, some open place where he can safely indulge in healthful romping, and with sufficient adjacent shelter to save him from a drenching in a fitful climate. The streets are neither suitable nor safe, and backyards are usually much too small. We have now several spacious parks, but, so far as concerns younger children, they are only of use to families resident in the immediate vicinity; and we have still very few playgrounds for children apart from those attached to schools. Open spaces for children need not be very large, but they should be numerous, so that the small children in any part of the city, especially in the crowded working class districts, can easily reach them. One appreciates the difficulty—of course, chiefly financial—in providing such spaces in already fully built-upon districts, but clearances are not infrequent, of which

advantage might be more often taken; and old properties in such districts are sometimes to be got for a modest price if quietly acquired, and their demolition would provide useful, if not large, playgrounds. It is gratifying to note that the Town Council is to provide a children's playground in the demolished area between Seamount and the Gallowgate. It will be a great boon in a congested district.

But what one regrets most is the almost complete absence of attempt to secure such children's spaces at the fringe of the city. There may appear to be little need of playgrounds in such a situation for the moment; there is abundance of unoccupied space at the gable ends of every half-built street, where the children may play and do play to their hearts' content. But in a few years, with the steady growth of the city, this street, and streets beyond, are completed with their dense rows of houses, and what was once the open fringe of the city becomes the centre of a crowded district, without a yard of common playground. Is it beyond the wit of the legislature to devise some practicable scheme by which all such districts should, when in course of construction, have such playgrounds laid out and preserved? Healthy children are a gain to the whole community, and the municipality might, therefore, bear, say, half the expense of buying these grounds and the whole expense of maintaining them. But the spaces would also improve the amenity and residential value of the district, and, therefore, the remaining half of the cost might be borne by owners of the land or houses. The legislative problem is, no doubt, difficult, but if some workable scheme could be prepared, a modern Parliament might be trusted to view it with favour. Uncramped provision for healthy open-air life and exercise is, in the opinion of every hygienist, a prime need for all children.

*Mortality at "Adolescent" Period (15-25 years).—*The death-rate at this period during the past year was 3·7 per 1,000. This is slightly higher than the rate (3·5) in the previous year, but, except for that year, it is the lowest on record. The mortality at this age-period has fallen much—almost by one-half—during the past thirty years, but the fall has not been proportionately so great as at the "school" age-period. The difference may be due not so much to less improvement at the later age than at the earlier age in the hygienic environment and conditions of life as to the fact that the earlier age has benefited more by the considerable decline, within recent years, in the mortality from several of the commoner zymotics. Any fall in this mortality chiefly benefits the earlier ages, for it is at these ages that most of the zymotics are prevalent. At the same time it is questionable if the hygienic environment of adolescents has improved as much as that of school children. In other words, it is doubtful if the hygienies of the workshop and office have made the same advance as the hygienies of the school. Perhaps they never will. For example, in the single but important matter of ventilation, it is not enough to see to the provision of adequate means of ventilation. The Sanitary Department has been insistent on such provision in every workshop. But means for ventilation are worth nothing if not used. In schools—at least, in all public schools supervised from a common centre—the regulation of the ventilation is made a prominent feature in the management. In workshops and offices, in too many cases, it receives no attention unless in hot weather, when ventilators or windows are opened for the mere purpose of reducing temperature; during the rest of the year they are closed. It is difficult for the sanitary authorities to deal with such neglect. The desired reform must come from the occupants themselves, through a clearer apprehension of the value of breathing fresh air. In winter, with open ventilators, more artificial heat and more clothing may be neces-

sary, but it is astonishing how persons of average health will quickly become habituated to the colder but fresher room, and feel stimulated and exhilarated by it, and will be surprised to find how much more rarely they suffer from colds, and how much their health is improved generally. Even weak people, such as bed-ridden consumptives, can lie in the coldest days and nights of winter with their beds across a widely open window and suffer no harm, but, on the contrary, derive remarkable benefit. There are, of course, a few persons who from peculiarity of constitution or illness cannot stand the cool air of a well-ventilated room, but they are far fewer than is generally believed. Fresh air in the office or workshop, fresh air in the sitting-room and kitchen, and fresh air in the sleeping-room ought to be the aim of every person, and especially of young men and women. It is the sovereign preventive of the greatest pestilence of adolescence—consumption.

I would only suggest further in regard to persons of adolescent age—and the suggestion is simply an extension of the observation just made—that every young man and woman whose occupation is sedentary or confined, should make a point of securing daily some out-door exercise or recreation—walking, cycling, football, cricket, golf, rowing, fishing—it matters little which, so long as it takes them into the open air and keeps their muscles in play. It should be regarded as a duty, and not merely as a pleasure or a pastime.

The age of adolescence is one at which the seeds of future illness are often sown. There is no period of life at which thoughtful and intelligent care of the body will be so amply rewarded in subsequent health. Young people are so buoyant and often so reckless of their store of health that they too frequently impose on it heavy mortgages that can never afterwards be liquidated. If they would be careful as to what they eat, and avoid hurried eating and irregular meal-hours, if they would not be heedless of colds and minor ailments, remembering that these, if neglected, may lay the foundations of a serious illness, and if they would always appreciate the supreme value of fresh air, they would more often enjoy a healthy, vigorous manhood, and prolong their lives.

Mortality at "Mature" Age-Period (25-60 years).—The death-rate (10·6 per 1,000) at this age-period last year was the lowest on record. It is interesting to note that this rate, which stood at an average of 18·7 in the ten years 1866-75, fell rapidly in the next five years to between 12 and 13. Since about 1880 up to and inclusive of 1902—that is, for about twenty years—it continued at from 12 to 13. But in 1903 it fell to 11·8, in 1904 to 11·1, and in 1905 to 10·6. This is a gratifying decline in the mortality at the most useful and productive of all the age-periods, and it is too large to be wholly explained away by an error in the population on which the rate has been estimated, such as I referred to at the commencement of the report. It is difficult to say what the causes of the decline may be. Perhaps we are beginning to reap, at this age, the benefits of the more stringent application in recent years by the Sanitary Department and the Factory Inspector of the laws applicable to the sanitary condition of workshops and factories, as also the benefits of the large clearances of slum property in the centre of the city.

Mortality at "Post-Mature" Age-Period (60 years and upwards).—The death-rate (61·6 per 1,000) at this, the latest of the age-periods, is also the lowest on record. Here also the fall is especially marked within the last three years, and is probably due to the same causes as have been operative at the preceding age-period.

It is satisfactory to find that practically every age-period has shared in the fall of the general death-rate.

(b) *Mortality in Relation to Cause.*—Tables III. and IV. give details of this for the past year, and Table VI. affords material for a comparison with previous years. The chief causes were, in the order of their numerical importance, diseases of the respiratory system, with 469 deaths, or 18 per cent. of the total deaths from all causes; diseases of the brain and nervous system, with 339 deaths, or 13 per cent. of the total deaths; diseases of the heart and circulatory system, with 332 deaths, or 12 per cent. of the total deaths; tuberculous diseases, with 299 deaths, or 11 per cent. of the total deaths; developmental diseases, with 169 deaths, or 6 per cent. of the total deaths; malignant diseases, with 145 deaths, or 5 per cent. of the total deaths; and miasmatic (infectious) diseases, with 139 deaths, or 5 per cent. of the total deaths. Then follow diseases of the digestive system, with 141 deaths; diarrhoeal diseases, with 109 deaths; diseases of the urinary system, with 69 deaths; venereal diseases, with 24 deaths; and septic diseases, with 22 deaths. In 72 cases, death was assigned to accident or violence; and in 92 cases to the debility of old age. The causes of death were, as usual, unequally distributed over the various age-periods. Among infants under one year, the most frequent causes of death were developmental diseases (including prematurity), which accounted for one-fourth of the deaths, diseases of the respiratory system accounting for one-fifth, and diarrhoeal diseases accounting for about one-eighth. At the "school" age-period the most frequent cause was tuberculous diseases, with two-fifths of the deaths; diseases of the respiratory system, with fully one-tenth; and diseases of the circulatory and digestive systems, each with one-eleventh. At the "adolescent" age-period, tuberculous diseases again came to the front, with the large proportion of about one-half of the deaths, followed at a long interval by diseases of the circulatory and nervous systems, each with one-thirteenth. At the "mature" age-period tuberculous diseases were once more the leading cause of death, with about one-fifth of the deaths, followed by diseases of the circulatory system, with one-sixth, and diseases of the respiratory system and nervous system, each with one-seventh. At the "post-mature" age-period, diseases of the circulatory system stood first with nearly one-fourth of the deaths, succeeded by diseases of the nervous system with one-fifth, and diseases of the respiratory system with one-sixth.

The variations, since the year 1866, in the mortality from selected causes can be followed in Table VI., which is one of the most interesting tables of the series.

The total mortality from the more common *miasmatic diseases* was one of the smallest recorded. The death-rates from diphtheria, scarlet fever, and typhoid fever were very low, and were in striking contrast with the high corresponding rates of thirty to forty years ago. Thus the death-rate from diphtheria had fallen from 23 to 6 per 100,000 of population; scarlet fever, from 72 to 7; and typhoid fever, from 42 to 2. These are enormous reductions, especially when it is considered that the rates last year for these diseases were not much lower than they had been for the preceding two or three years. The death-rates from whooping cough and measles were also low, although not so low, absolutely or comparatively, as those first mentioned. The death-rate from influenza was somewhat high. The death-rate from typhus fever, owing to an outbreak, was higher than it had been for over twenty years, but much lower than thirty to forty years ago.

The mortality rate from *phthisis*, which had touched its lowest point in the preceding year, showed a very slight and practically negligible increase last year. The rates for the past two years stand out distinctly as the lowest on record, being considerably under one-half of the average rate thirty to forty years ago.

TABLE VI.—DEATHS FROM SELECTED CAUSES
(per 100,000 of population). — *Years* 1866-1905.

Year,	MIASMATIC DISEASES.								Diarrhoea and Dysentery. †	Phthisis. Cancer and other Malignant Diseases.	Bronchitis.	Pneumonia.	Diseases of Circulatory System. †	Diseases of Digestive System. †	
	Smallpox.	Scarlet Fever.	Diphtheria.	Measles.	Whooping Cough.	Influenza.	Typhus Fever.	Typhoid Fever.							
1905, . . .	0	7	6	20	20	20	8	2	65	121	87	120	128	198	84
1904, . . .	0	13	7	58	91	8	5	2	66	120	99	130	130	204	94
1903, . . .	0	8	8	73	27	14	0	2	73	143	83	142	114	217	110
1902, . . .	0	7	13	11	82	29	0	2	53	136	88	144	134	225	100
1901, . . .	0·6	6	10	41	10	27	0	10	18	132	95	162	124	220	178
1900, . . .	0	7	20	37	60	54	0	7	17	166	87	170	123	211	173
Average 1900-1904,	0·1	8	12	44	54	26	1	5	45	139	90	150	125	215	131
1899, . . .	0	11	20	90	34	34	0	15	23	153	98	159	111	180	157
1898, . . .	0	26	25	15	73	23	1	10	23	162	88	173	112	197	194
1897, . . .	0	21	10	17	15	25	0	5	28	157	92	183	106	189	159
1896, . . .	0	44	15	29	86	13	0	4	15	173	91	167	85	172	145
1895, . . .	0	22	9	133	70	61	0	14	33	188	88	226	96	176	151
Average 1895-99,	0	25	16	57	56	31	0·2	10	24	167	91	182	102	183	161
„ 1886-95,	0·6	18	16	73	60	34	1	12	47	185	76	217	105	169	152
„ 1876-85,	0·4	24	22	32	67	1	13	21	58	215	65	268	77	152	131
„ 1866-75,	2·6	72	23	53	67	6	37	42	75	282	59	267	67	133	165

† Classification altered in 1902.

It is gratifying to notice that the mortality from *cancer* showed some distinct abatement last year, but it is still more than one-third greater than it was thirty to forty years ago. On the whole, the mortality from cancer has not shown any clear tendency to increase during the past ten years. In the preceding ten to twenty years it increased rapidly.

The death-rate from *bronchitis* last year was the lowest recorded, and was, like the rate from phthisis, considerably under one-half of the average rate about thirty or even twenty years ago.

The death-rate from *pneumonia* showed a slight decline as contrasted with that for the preceding year, but it still remains nearly twice as high as the rate of forty years ago. The rise in this rate, however, is much more than compensated for by the fall in the bronchitis rate.

As the classification of *diarrhoeal diseases* and *diseases of the digestive system* was altered at the beginning of 1902 by the transference, from the latter to the former, of the forms of gastric and intestinal illness believed to be of germ origin, any change in the incidence of the mortality from these diseases can be ascertained only by taking both groups together. Thus combined, the mortality from these diseases shows a considerable fall during the past thirty years, but the greater part of this fall was experienced in the first decade of that period. The rate during the past year was the lowest recorded, although only a very little below the rate in 1902.

MORBIDITY AND MORTALITY FROM ZYMOTICS.

(Table VII.)

Table VII. gives the statistics of the morbidity and mortality from the commoner zymotics during the past year, and in each of the preceding ten years. The averages for this decade and for the previous decade are also given. The number of cases or sicknesses is stated for each disease, with the number of deaths, as also the case-mortality, or per-centage of deaths to sicknesses.

It is necessary to keep in mind that the compulsory notification of measles and whooping cough was discontinued early in February, 1903. As was explained in the report of that year, an effort has since been made to obtain information of cases of these diseases mainly through the school attendance officers, and by voluntary intimation. We believe that we are thus being informed of the majority of the cases, but the apparently rapid rise of the case-mortality since notification ceased, and especially noticeable in the past year, points almost certainly to a not inconsiderable proportion of the cases remaining unreported. The figures for these two diseases, except in regard to deaths, are, therefore, not strictly comparable with those of previous years.

The statistics show that, during the past year, the total known cases of the seven zymotics embraced in the table were greatly under the average for the preceding ten years, even after making reasonable allowance for the unnotified cases of measles and whooping cough. Only 1,104 cases were reported or discovered last year, as against an annual average of 5,346 cases in the previous decennium. The predominant zymotics were, as usual, measles (with 370 cases) and whooping cough (with 232 cases), but they were nearly approached in prevalence by scarlet fever (with 215 cases) and diphtheria (with 166 cases). The most interesting and,

TABLE VII.—MORBIDITY AND MORTALITY FROM ZYMOTICS (MIASMATICS)

DURING EACH YEAR FROM 1895 TO 1905, INCLUSIVE.

DISEASE.		1905	1904	1903	1902	1901	1900	1899	1898	1897	1896	1895	ANNUAL AVERAGE.	
													1895 to 1904.	1895 to 1899.
Small Pox,	No. of Sicknesses,	0	3	0	0	7	0	1	0	0	0	1	1·2	5·8
	No. of Deaths, ...	0	0	0	0	1	0	0	0	0	0	0	0·1	0·5
	Percent. of Deaths to Sicknesses,...	0	0	0	0	14·7	0	0	0	0	0	0	8·3	8·6
Measles, ...	No. of Sicknesses,	370	1913	3246	1999	2796	3061	6527	734	1884	1917	2874	2695	1502
	No. of Deaths, ...	33	95	118	18	63	56	134	21	23	30	172	73	68
	Percent. of Deaths to Sicknesses,...	8·9	5·0	3·6	0·9	2·3	1·8	2·1	2·9	1·2	1·6	5·9	2·7	4·5
Scarlet Fever, ...	No. of Sicknesses,	215	589	465	321	385	371	342	1078	1053	1676	596	688	583
	No. of Deaths, ...	11	21	13	11	9	10	16	38	29	62	31	24	19
	Percent. of Deaths to Sicknesses,...	5·1	3·6	2·8	3·4	2·3	2·7	4·7	3·5	2·8	3·7	5·2	3·5	3·3
Whooping Cough, ...	No. of Sicknesses,	232	1696	507	3645	591	2471	1377	2968	366	1886	1676	1718	845
	No. of Deaths, ...	34	150	43	129	16	90	50	106	21	128	95	83	62
	Percent. of Deaths to Sicknesses,	14·7	8·8	8·5	3·5	2·7	3·6	3·6	3·6	5·7	6·8	5·7	4·8	7·3
Diphtheria.	No. of Sicknesses,	166	170	182	180	166	128	153	209	93	108	69	146	59
	No. of Deaths, ...	10	12	13	20	14	30	29	37	14	26	12	21	20
	Percent. of Deaths to Sicknesses,...	6·0	7·1	7·1	11·1	8·4	23·4	18·9	17·7	15·1	24·0	17·4	14·2	33·7
Typhoid Fever, ...	No. of Sicknesses,	23	37	26	46	163	109	138	180	58	78	105	94	98
	No. of Deaths, ...	4	4	4	3	15	10	22	14	7	5	18	10	14
	Percent. of Deaths to Sicknesses,...	17·4	10·8	15·4	6·5	9·2	9·2	15·9	7·8	12·1	6·5	17·1	10·9	13·9
Typhus Fever, ...	No. of Sicknesses,	98	34	0	0	0	0	5	5	0	0	0	4·4	13·4
	No. of Deaths, ...	14	9	0	0	0	0	0	2	0	0	0	1·1	1·9
	Percent. of Deaths to Sicknesses,...	14·3	26·5	0	0	0	0	0	40·0	0	0	0	25·0	14·2
Totals,	No. of Sicknesses,	1104	4442	4426	6191	4108	6140	8543	5174	3454	5665	5321	5346	3106
	No. of Deaths, ...	106	291	191	181	118	196	251	218	94	251	328	212	185
	Percent. of Deaths to Sicknesses,...	9·6	6·6	4·3	2·9	2·9	3·2	2·1	4·2	2·7	4·4	6·2	4·0	5·9

perhaps, the most alarming outbreak, however, was due to typhus, of which there were 98 cases, including certain cases not discovered until after their full course had been run. Typhoid produced only 23 cases.

Small-pox.—There were no cases of this disease throughout the year. There had been three cases in the early part of the preceding year.

Measles, after being almost continuously epidemic since the beginning of 1899, showed a considerable decline last year. The apparently excessive case-mortality (8·9 per cent.), as already remarked, makes it probable that not much more than half of the cases actually occurring were made known to us. But even then the number of cases would be the lowest for at least ten years, with the possible exception of 1898. It cannot be too frequently emphasised that, while measles is a disease which is freely prevalent during all the early years of child life up to about eight or nine years, the ages showing by far the heaviest case-mortality are one and two, and, in greatly reduced degree, three and four years. At higher ages the mortality is very small. This was clearly brought out in the paper on "Measles in Aberdeen," by Dr. George N. Wilson, appended to the preceding Annual Report. There was one point overlooked in that paper to which I wish now to call attention. It was stated, in a review of the figures for the years 1883-1902, which years cover the period of the compulsory notification of measles in this city, that there had been in the later years a considerable decline in the case-mortality as compared with the earlier years, but Dr. Wilson omitted to state that this decline had been much greater at the more advanced ages of childhood than at the younger ages. This is made clear in the following table, in which the case-mortality for the first five years of compulsory notification is compared with the last five years:—

MEASLES—ABERDEEN.

	AGE.								
	Under 1 Year.			1 to 5 Years.			5 to 15 Years.		
	Cases.	Deaths.	Case Mortality.	Cases.	Deaths.	Case Mortality.	Cases.	Deaths.	Case Mortality.
1883-1887	610	104	1 in 6	3,839	256	1 in 15	2,752	31	1 in 89
1898-1902	1,111	104	1 in 11	7,699	172	1 in 45	5,811	13	1 in 447

In the last quinquennium measles had become about one-half as fatal for infants under one year as it was in the first quinquennium, one-third as fatal for children above one and under five years, and one-fifth as fatal for children of five to fifteen years. These are remarkable differences, and show how—at least, in Aberdeen—the mortality from measles among children of the ordinary school age has become, roughly, only about 1 in 500 cases. Common colds are scarcely more dangerous. At the same time, the figures show how high the mortality still is at the earlier ages. The practical conclusion is that no effort should be accounted too great to save the very young children from measles when it breaks out in a family. It is criminally foolish to expose such a child to the infection in the belief that it must take the disease some time, and as well now as again. If the attack can be staved off till the child is past four or five years of age, the chance of death may be only one-fortieth to one-fiftieth of

what it is in infantile life. After the age of five years, although the opinion may smell of hygienic heterodoxy, I am disposed to advise that the child, if in fair health, may as well be allowed to take measles. In a town such as this, it is my belief, as I have said in a previous report, that practically no person escapes measles; and statistics and clinical experience show that the safest age for the child to overcome an attack corresponds roughly with the school age. The mortality at still higher ages is also very low, but the attack is apt to be more oppressive and less tolerable. Moreover, at these later ages, the necessary interference with the work of the patient is more serious. There is also, I think, at the age of adolescence a greater risk of the attack of measles, which produces considerable depression of the vital energies for a time, being followed by tuberculous disease where some predisposition exists.

Whooping Cough, like measles, was evidently very deficiently intimated to the Public Health Department, otherwise it is difficult to account for an apparent case-mortality of 14·7 per cent. last year, as compared with an average of 4·8 in the preceding ten years. In any event, the cases last year were considerably under the average in number. This disease agrees with measles in being most dangerous to the very young. It is rarely fatal, in recent times, among children who have reached the age of four or five years. I believe it, like measles, to be a disease from which no town child is likely to escape. If a not inconsiderable proportion of town-reared persons disclaim ever having had whooping cough, it may be due to their having suffered in so mild a form that the disease was not recognised. There is no zymotic without a considerable proportion of mild cases. But the rash usually enables the disease to be diagnosed, even in very mild attacks. There is no rash, and often very little febrile disturbance with whooping cough. The diagnosis is made to depend largely on the peculiar crowing inspiration accompanying the cough. But in mild cases this peculiarity is often wanting, and the case is apt to pass for one of somewhat obstinate cold. Here also, as with measles, I am disposed to say that while every measure should be taken to protect from whooping cough a child under four or five years of age, there is much less occasion for such protection in a child of the school age, if the child be in ordinary health. At the adolescent age, an attack sometimes awakens a dormant tendency to phthisis.

Scarlet Fever, which, with the remaining zymotics embraced in Table VII., is compulsorily notifiable, produced few cases—only 215—during the past year. This is the smallest number in any year for at least ten years. For the past seven years scarlet fever has been slightly prevalent in Aberdeen, as compared with the immediately preceding three years. In these seven years 2,688 cases in all have been notified. In the preceding three years (1896-97-98) the cases amounted to 3,807. I doubt if these figures are to be taken as indicating that we have entered upon a period of permanent decline in the prevalence of this disease. But there can be no doubt that, whatever be the exact cause, we have recently been enjoying, in company with many other communities, a remarkable degree of freedom from epidemic prevalence of scarlet fever. During the seven years referred to, the case-mortality was also low up to the last year of the seven, when it rose to 5·1 per cent. This is a higher case-mortality than in any year since 1895, when it was 5·2. Scarlet fever, differing from measles and whooping cough, is a disease which many escape even in large towns, and which is more or less dangerous at all ages. It is, perhaps, least dangerous in early infancy. It is, therefore, a disease to be guarded against at practically every age.

Diphtheria, judged by the notified cases, has shown a steadily high prevalence for the past eight years, although during last year the number of cases (166) was slightly less than in

any of the preceding three years. During the ten years, 1895-1904, the average annual number of notified cases was 146; in the preceding ten years it was only 59. It is, however, interesting to note that during the same periods the average annual number of deaths was 21 and 20, respectively. Diphtheria is a somewhat ill-defined disease clinically in many cases, and shades off into what is often regarded as simple sore throat. Seeing that the mortality has not sensibly altered (if allowance be made for growth of population) during the past two decades, it is open to suggest that the apparent increase of prevalence in the latter decade is due in part to a larger proportion of clinically doubtful cases being notified than formerly, owing to the assistance rendered to diagnosis by the bacteriological examination of the throat, public provision for which began in this city about seven years ago. That this is a factor in the situation cannot be doubted; but the increase of cases is too large to be wholly or even largely explained in this way. On the other hand, the absence of an increase in the deaths from diphtheria can, apart from the possibility of a change in the severity of the disease, be adequately accounted for by the efficacy of the antitoxin treatment, which emerged from the experimental stage near the beginning of the past decade. In this connection it is gratifying to observe that the case-mortality from diphtheria was last year only 6 per cent., or about 1 death in 17 cases, which is the lowest recorded since compulsory notification began. In the ten years, 1885-1894, the average case-mortality was nearly 34 per cent., or 1 death in 3 cases. The experience of the City Hospital shows that antitoxin is of the greatest value in the treatment of diphtheria, and is practically an infallible remedy if used sufficiently early. Owing probably to its expensiveness, and to the mode of its application, it is still too seldom used among home-treated cases, and I would repeat the suggestion formerly made that, perhaps, the most effective way for the Local Authority to deal with diphtheria would be to supply, on application, both antitoxin and a sterilised syringe to the medical attendant of any case. The syringe would be returned to the Public Health Department, and cleaned and sterilised for further cases. The cost to the Local Authority last year, had all the cases been so treated, would not have exceeded £50 to £60, and three-fourths of this was, in any event, expended in treating the large proportion of cases removed to the City Hospital. But it would have been of great advantage in many of the latter cases to have had the treatment applied at an earlier stage and before the removal to hospital. Too many cases are sent to hospital only after ordinary medical treatment has had no effect, and suffocation is threatening. Antitoxin is not of much service at so late a stage.

Antitoxin is efficacious not only as a remedy, but also as a preventive. A tenth, or less, of the remedial dose is sufficient to confer protection for some three or four weeks. The administration is not attended by any evil effects, so that it is open to any apprehensive person to acquire immunity for a period. The preventive virtues of antitoxin render the removal of doubtful cases of diphtheria to hospital a less anxious proceeding than formerly, and enables the medical attendant and hospital officer to quieten the fears of the parents. If there has been an error in the diagnosis, the dose of antitoxin before or immediately after the admission to hospital prevents the patient being infected, even if lying in the heart of a diphtheria ward. Only those who know the cares of the administration of a fever hospital can appreciate the sense of relief afforded by this consideration.

None of the cases of diphtheria occurring during the year could be associated with any source of infection beyond personal infection in families, schools, &c. The supposed causal connection between diphtheria and bad drains is no longer so confidently believed in by

sanitarians, although it continues to create anxiety among the laity, and, perhaps, usefully, for emanations from bad drains may impair the general health and diminish the natural vital resistance to attack by any kind of disease-producing germ, be it the germ of diphtheria or tubercle. It is, therefore, important to have a good system of drainage and to maintain it in good order.

Typhoid Fever.—There have not been in Aberdeen for many years so few cases of typhoid fever as during the last year. There were only 23 cases, or an average of about 2 monthly. During the past four years there were, in all, 132 cases. In the preceding four years there were 590 cases, a considerable proportion of which were associated with infected milk supplies. So far as known, there have been no such infected milk supplies during the past four years. Not all of the cases occurring last year responded to the Widal blood test; some appeared to be bacteriologically of a para-typhoid character, although clinically not distinguishable from ordinary typhoid cases. It is probable that the failure of the Widal test in some para-typhoidal cases may have prevented their notification, and thus reduced the number of notified cases. The case-mortality, unfortunately, was unusually high, and amounted to 1 death in every 6 cases. The average case-mortality for the preceding ten years was about 1 in 9. The cases last year were practically all sporadic, and unconnected with one another or with any known common cause.

There has been a decline, in recent years, almost everywhere in the number of deaths from typhoid fever, but in few places, if any, has the decline been so pronounced as in Aberdeen. The general decline in Scotland began about 1880, and has proceeded slowly but steadily till now, the mortality rate at the present time from typhoid being only about one-fifth to one-fourth of what it was twenty-five to thirty years ago. Various factors may have been at work in reducing the amount of typhoid, such as improved water supplies, better regulated dairies with purer milk supplies, improved house drainage, the reduction of ash-pits, more thorough scavenging, and better standards of living.

Typhus Fever.—An epidemic of this disease began in the last months of 1904 and continued until about the middle of April, 1905, and fully taxed for a time the energies of the Public Health Department. Most of the details of the epidemic, and of the measures taken to suppress it, have been described in the relative monthly reports, but it may be well to bring the main facts together in this report, the more as typhus possesses exceptional interest on account of the rarity of its occurrence in more recent times.

Aberdeen, in common with other large towns in this country, has suffered heavily from typhus in the past. The disease was rarely absent from the city, and was often widely prevalent. No zymotic was so greatly dreaded, because of its infectiousness and of its high fatality. Within the last quarter of the past century a marked abatement in its prevalence has begun to be experienced, so that the mortality from typhus, which in the ten years ending 1875 (see Table VI.) had annually averaged 37 per 1,000 of the population, fell in the next decade (1876-1885) to 13, and in 1886-95 to only 1 per 1,000. During the past ten years, until the occurrence of the epidemic now under review, only 2 deaths from typhus had been registered, both being in 1898, and 10 cases had been notified—5 in 1898, and 5 in 1899. None of these cases was in a house or in a family visited by the recent epidemic.

The details of the commencement of the recent epidemic are given in the monthly report for December, 1904. The first case to come under my observation occurred towards the end of that month, and had been at the commencement regarded by the medical attendant as a

case of measles, accompanied by an unusual amount of delirium. The investigation of the origin of this case, and especially of another case which occurred a few days afterwards, led to a series of cases, all related to one another by contact and presenting somewhat similar symptoms, being discovered, the earlier cases having begun in October or November. Owing to the rarity of typhus at the present day, and the obscure character sometimes of the symptoms, these earlier cases had been attributed to influenza, pneumonia, meningitis, &c. The illness, where death occurred, had lasted about six to nine or ten days, and was severe in adults, and, in almost every case, accompanied by more or less delirium. During the month of January, 34 additional cases occurred, and, in February, 51 cases. In March, the cases fell greatly, and after about the end of the first week in April no further cases are known to have occurred.

With three or four exceptions, occurring in the later part of the epidemic, it was found possible to correlate all the cases, and to carry them back by a succession of established contacts to one family, in which the father had died after a short illness, and in which all the younger members of the family had, subsequent to the father's death, been laid up for a time; but there is difficulty in accepting this as the initial case, owing to its being subsequently ascertained that this man had suffered from an attack of typhus in early life; yet a woman who came in to assist in nursing this man took ill a few days afterwards, and died within a week from the commencement of her illness, with symptoms corresponding to those of typhus; and the brother-in-law and sister-in-law of the man, who had visited him during his illness, both took ill a short time afterwards, again with symptoms like those of typhus, and died after a short time. It was also found that the school attended by two of the members of the man's family was associated with the propagation of typhus among several of the pupils. No connection with cases elsewhere in Scotland could be discovered, although diligently searched for.

The cases occurring throughout the whole outbreak, omitting certain doubtful cases, were distributed, in respect of age, as follows:—

Age.	Number of Cases.	Deaths.	Age.	Number of Cases.	Deaths.
0-5 . . .	9 . . .	0	35-40 . . .	5 . . .	2
5-10 . . .	24 . . .	1	40-45 . . .	8 . . .	6
10-15 . . .	32 . . .	0	45-50 . . .	4 . . .	3
15-20 . . .	19 . . .	1	50 upwards, . . .	7 . . .	6
20-25 . . .	11 . . .	2			
25-30 . . .	7 . . .	0	Totals, . . .	131 . . .	22
30-35 . . .	5 . . .	1			

There were thus, in all, 131 cases, with 22 deaths, and it will be observed that the cases were decidedly more numerous at the lower ages than at the higher ages—fully one-half having occurred among children under 15 years of age. This is contrary to the statements usually met with in works dealing with typhus, where the disease is stated to be one mostly of adult life, but this I imagine to be due largely to the statements being based upon purely hospital experience in times when typhus was much more prevalent than now, and when only the serious cases—that is, adult cases—would be removed to hospital. For it will be seen that, in the recent epidemic, there were 19 cases above the age of forty, and 15 of them died; whereas under the age of fifteen there were 68 cases, with only 1 death, and there the cause

of death was open to some degree of doubt. There are few zymotics, if any, which present so striking a difference in fatality in relation to age.

In several instances nearly all the members of the family were attacked; thus 81 cases occurred in sixteen families, the number in a family ranging from 3 cases in each of five families up to 8 in one and 9 in another. When the disease spread through a whole, or nearly a whole, family, the house was nearly always more or less dirty, and in some cases very dirty. When the disease was traceable to school origin, it naturally occurred first in the children of a family, and from these spread to the parents; where the infection was obtained from other sources, the disease almost invariably began in the adults of the family. In almost every instance there was one case to begin with in the family, followed at a distinct interval by a second case, or a group of cases. Sometimes the group of cases appeared only in the third generation of the disease within the family, there being two single cases in succession followed by a group. Where two cases were found occurring simultaneously in a family, it almost invariably happened that there had been a previous case in the family, although the true nature of the case might not, at the time, have been recognised.

Omitting the City Hospital, all the houses in which the cases occurred were, with four exceptions, houses of three rooms or under—mainly two and three rooms. In only four cases did the house consist of one room. In none of the houses of more than three rooms was there more than one case; but all these houses were clean. The cubic contents of the houses were not actually measured, but there did not appear to be legal overcrowding in any of the houses, taking the minimum for an adult at 400 cubic feet, but the minimum was closely approached in some of the houses in which the disease most freely spread. These were all dirty houses.

The disease was not found to be infectious in its early stages, say, during the first week. In every instance where the first case in a family was removed before the end of the first week of the illness, no other case followed in the family. Different views are expressed by the authorities as to the period of greatest infectiousness, some placing it early and others late, but all appear to be agreed in regarding typhus as one of the most infectious of diseases. For example, Osler, in his well-known work on Medicine, after referring to it as one of the most highly contagious of febrile affections, says that "in epidemics nurses and doctors are almost invariably attacked," and further, that "when the sick are aggregated in wards the poison appears to be concentrated, and the danger of infection is much enhanced." It cannot be doubted that typhus is distinctly infectious; but the experience of the recent epidemic seems to show, at any rate for that epidemic, that the infectiousness is not so overwhelming as is sometimes believed. Some of the facts just stated tend to bear this out, and there are others. For example, the disease had apparently been in the city for two to three months before it was discovered, and, therefore, before steps were taken to control it, yet it had not produced many cases; and, later on, when it came under the notice of the Public Health Department, it was not difficult to control. Had measles got a similar footing in a community unprotected by earlier attacks, it cannot be doubted that it would have spread like wildfire.

At the beginning of the epidemic only one member (a nurse) of the hospital and sanitary staff had previously had typhus, yet out of the members of the staff in actual contact with the typhus cases, in all about 46, some being in the most intimate and daily contact for three to four months, only one nurse, one wardmaid, and one ambulance driver were infected

during the first eight weeks of actively dealing with the epidemic, although, later, four other nurses and one wardmaid were attacked. All who were attacked were more or less seriously ill, and, fortunately, all recovered, except the ambulance driver, whose death was greatly felt, as he had been for several years in the employment of the Department, and was a most valuable and obliging officer. Some very interesting and suggestive points were observed in regard to the distribution of the attacks among the staff. No nurse in the convalescent wards was infected. Owing to the press of patients in the acute wards, several patients were early transferred to the convalescent wards, almost immediately after the active stage of the fever was passed, and presumably a week or two before they had ceased to be infectious, yet none of the nurses or wardmaids in the convalescent wards was attacked. Again, the two sisters and some of the nurses in the acute wards who were most intimately in touch with the patients during the whole course of the epidemic escaped, although not protected by having previously suffered from the disease. Also all the ambulance staff escaped, after certain precautions began to be taken, which will be immediately explained.

Early in the course of the epidemic, having the analogy of malarial and certain other fevers in my mind, I began to suspect, from certain considerations and occurrences, that the infection of typhus, like that of malarial fever, may be conveyed by insects—in this case, by body vermin, such as fleas. The fleas feed on the blood of the patient, and may become themselves infected, and act as carriers of the infection to fresh human beings, as mosquitoes are known to do in malarial and yellow fevers. I regret that it was not found possible by a bacteriological and experimental investigation to test this suggestion, as the typhus germ has not yet been definitely isolated by any bacteriologist, but the following facts strongly support the hypothesis. In the first place, every case of typhus seen and examined by my assistants and myself in the hospital exhibited flea-bites, and the members of the hospital staff who complained most of flea-bites were those who were attacked by typhus. The ambulance driver, for example, had repeatedly changed his underclothing because of fleas. He had carried some of the patients in his arms. We were careful to distinguish between flea-bites and petechiae from rash. In the second place, every case, however clean and free the patient might personally be from body vermin, was found to have been, at the probable time of infection, in contact with vermin-infested patients. In the third place, I am not aware of the disease having in any instance spread in a family of perfectly clean habits, even although a typhus-stricken patient had lain in the house during the major part of his illness, and in two cases without any attempt at isolation. In one such case the mother had slept with her child during the illness, but was not infected. In another case, where there was careful isolation at home, in a clean and excellent house, the patient was attended by two nurses who had never had typhus. The doctor, also unprotected by a previous attack, spent hours in the patient's room, and certain members of the family, also unprotected, were frequently in the sick room; yet all escaped. This case, which died after an illness of nearly four weeks, was one of the saddest in the epidemic, for the infection had been caught while the patient—one of the most esteemed ladies in the city—was on an errand of mercy to a poor and ill-cared for family, in which it was afterwards found that typhus was present. In the fourth place, every nurse and wardmaid at the City Hospital who had been attacked was, with two exceptions, employed in removing the typhus patients to the hospital, or in cleaning and bathing them on admission. They were, therefore, exposed to the vermin on the patients' bodies and clothing. Of the two exceptions referred to, one was of much interest, and serves to give

additional strength to the theory. It was of a nurse who had never been in the typhus wards, but who was employed in cleaning some dirty children, who had been removed as contacts from a typhus-infected family. These children were not themselves ill at the time, though some of them developed the disease a few days later. There were many fleas on their clothing, and the presumption is that some of these fleas had come from the typhus-stricken member of the family. The second exception was that of a nurse, who, although not directly employed in conveying or cleaning patients, had been in proximity to patients while being cleaned. No nurse or wardmaid, however intimate her contact with the typhus cases, or however prolonged the exposure to infection, who did not assist in removing patients to hospital or in cleaning them, was attacked—for example, all the nurses on night duty in the acute wards, and all the nurses, both day and night, in the convalescent wards. In the same category may be placed the doctors and the matron. In the fifth place, after the commencement of the illness of the ambulance driver, I arranged for the rest of the ambulance staff taking precautions against invasion by fleas from typhus patients or clothing by wearing top-boots, and stuffing their trouser legs inside the boots, by donning closely-fitting overalls that buttoned closely at neck and wrists, and smearing neck, wrists, ankles, and top of boots with a solution of eucalyptus oil in olive oil. Eucalyptus is believed to be unpleasant to insects. After these precautions were taken, no member of the ambulance staff took typhus, and they practically did not suffer from flea-bites.

These are the chief considerations, derived from my recent experience in this epidemic, which have impelled me to put forward the theory of the flea or vermin transmission of typhus infection. It derives support from the reported observations of other writers, although they have not offered the same explanation. For example, in the Liverpool fever hospitals, Dr. Russell has remarked on the curious freedom of the wardmaids from the infection of typhus, although they are daily employed in sweeping and cleaning the wards, and therefore freely inhale the ward dust. He also observed that typhoid patients nursed in the same ward with typhus patients did not take typhus. Dr. Russell further remarks that throughout three or four years, in which over 800 cases of typhus were recently treated in the Liverpool hospitals, no doctor or medical student visiting the wards took the disease; and he contrasts this immunity with a different state of matters in the old-time epidemics. The same difference has been experienced in Aberdeen. But the difference can be readily explained by the scrupulous cleanliness of a modern hospital ward, with its ample bath-room accommodation, as compared with the practically bathless hospitals of former times. The older hospitals were probably never free from body vermin. Of course, it must be admitted that modern hospitals are greatly improved in respect of air-space and ventilation, which tends to dilute every form of infection. Some writers have remarked that the clothing of a typhus patient appears sometimes to be more infectious than the body of the patient. This is precisely what we would expect with a dirty, flea-infested patient, after he has been divested of his clothing and washed. The fleas remain with the clothing, but as, in such circumstances, they are naturally on the outlook for new quarters, they are more likely to transfer themselves to a fresh host than when the clothing still invests the original host. For the same reason, a person immediately after death may be more infectious than before death. With the cooling of the dead body, the fleas forsake it for a living host. In one of the cases during the recent epidemic the infection was apparently got during a visit to a house shortly after the death of a typhus patient. The visitor ate nothing during his visit.

The theory of flea transmission also explains how typhus is chiefly confined to the poorer and more wretched classes, although proving by its attacks on others, for example, on hospital nurses, that other classes are not insusceptible. Many of the persons attacked during the recent epidemic, although living in small and dirty houses, were well nourished and apparently well fed. It was, therefore, not their poverty which made them susceptible; and dirt of itself, as so much dead inert "matter out of place," is not necessarily provocative of typhus. But wherever there is a dirty house there is almost certain to be an abundance of body vermin.

If this theory be confirmed by the experience of future epidemics, not only will it modify our methods of approaching and dealing with the disease, but it will furnish a fresh argument for cleanliness of person and home. Along with the abuse of alcohol, and perhaps resulting in a large measure from it, uncleanness in the persons and homes of too many of the poorer classes is one of the chief hindrances to the further improvement of the public health.

The other features in the typhus epidemic may be very briefly stated. Careful notes were taken of the probable period of incubation in every case, and it was found to vary from about 8 days to 24, and probably, in once case, 26 days, the most common period being about 12 to 14 days. The extreme periods are beyond those usually quoted, but they were well attested in two cases in the epidemic. The duration of the illness in fatal cases varied from 8 to 13 days, and, in one case, 27 days. The rash usually appeared on the fourth or fifth day, rarely so early as the third day. In some cases it was profuse and very distinct, in others, it was seen with difficulty. The mulberry character of the rash, as described by Jenner, was not often made out. The characteristic typhus odour of the patient was usually well marked. Contrary to the descriptions of several writers, the pupils were usually found to be unaltered in size or slightly dilated. They were contracted, as a rule, only during active delirium. The temperature in some cases, otherwise characteristic, did not exhibit the sudden drop often described as characteristic of typhus. In such cases the drop was gradual, and approximated to that of typhoid. The usual duration of the pyrexia was 12 to 14 days, but varied in some cases to 9 and 18 days. The nervous system was profoundly affected, beginning with intense headache and restlessness, followed by great mental anxiety and, in the severer cases, with delirium. There was sometimes a complete loss of memory for all events during the illness, and even of many previous events, with much impairment of intelligence and with slow recovery of mental power.

In a small outbreak of typhus in 1899, I found that the blood of the patients gave the agglutinative reaction with a typhoid culture, but the dilution employed at that time in the Pathological Laboratory was 1 in 20. In the present epidemic, the blood in practically every case was tested at various stages of the illness. In a considerable majority, a reaction was obtained with a dilution of 1 in 20, or 1 in 10, with a time limit of three-quarters of an hour; but in no case was the reaction got when the dilution was 1 in 50. The reaction was in some cases obtained as early as in typhoid cases, but usually a few days later.

In treating the cases, great advantage was derived from the freest possible ventilation of the wards. Although the epidemic occurred in mid-winter, the windows and doors of the wards were kept constantly open, and the vivifying effect of the abundance of fresh air on a severe case was very evident. The treatment was, indeed, nearly as much of an open-air character as the similar modern treatment for phthisis.

The period of infectiousness appeared to last for from four to five weeks. In one case there was almost irrefragible proof of its having extended to fully five weeks. The cases treated in hospital were usually not discharged before the lapse of six weeks from the beginning of the illness.

As to the measures taken to control the epidemic, all known and still infectious cases, except one, were removed to hospital. If the house was dirty and flea-infested, all the other members of the family were removed to the reception wards of the hospital, and cleaned and kept under observation. So long as they continued to be in good health, the working members were allowed to go out to their employment, but they otherwise lived in the reception wards. If the house was clean, the other members of the family were left at home, but they were visited by a medical or sanitary officer every second day for the first fortnight, and twice a week for the next fortnight. This system worked admirably, and without a hitch. The infected bedding and clothing was removed to the disinfecting station by ambulance porters, who used the personal precautions already described. To aid these precautions, houses, when dirty, were thoroughly fumigated with sulphur before the bedding was removed, in order, if possible, to kill or stupefy the body vermin. It is well known that sulphur is more potent for this purpose than formaldehyde. After removal of the bedding, the house was sprayed with formaline by the Lingner apparatus or the ordinary pump spray. The wall-paper, if any, was usually removed, and the walls lime-washed. Finally, all woodwork was washed with soap and disinfectant solution. There was no evidence in any case of the house having retained infection after such treatment.

TUBERCULOUS DISEASES.

(Tables III., IV., V., and VIII.)

The deaths from phthisis amounted last year to 203, or 6 more than in the preceding year (1904), and, if all forms of tuberculous disease are included, the deaths last year were 299, as against 320 in the previous year, thus showing a fall of 21. In the year 1903, the total deaths from phthisis and other tuberculous diseases were 344, of which 230 were due to phthisis. It is satisfactory to state that the total tuberculous death-rate last year is the lowest on record. As has already been remarked in an earlier part of the report, the death-rate from phthisis in Aberdeen is now considerably less than half of what it was thirty years ago. The great decline in tuberculous diseases, which is still going on, is one of the most gratifying features of these annual reports. Aberdeen is not singular in this experience, although the decline has been greater here than in most other towns. As I have stated in previous reports, I believe the decline to be probably due to the general improvement in sanitation and in the standard of living, the latter, in turn, being the result of higher wages and the greater purchasing power of money. This goes to show, what every authority admits, that one of the most potent factors in the prevention of tubercle is a healthy, well-nourished body. But tubercle, as everybody now knows, is a germ disease; and without the specific germ there would be no tubercle. Accordingly, organised efforts are being made in many places to deal with tuberculosis, and especially with phthisis, as an infectious disease, to be notified and controlled like other infectious diseases, although by somewhat different methods. In order to stimulate these efforts, and to offer some guidance, the Local Government Board has recently issued a very valuable circular on the Administrative Control of Phthisis. This

TABLE VIII.—DEATHS AT VARIOUS AGE-PERIODS FROM TUBERCULOUS DISEASES
IN YEAR 1905, WITH AVERAGE FOR PRECEDING FIVE YEARS,

Compared with Deaths from Miasmatic Diseases and from All Causes.

	Year.	Number of Deaths.					Proportion of Deaths from Tuberculous Diseases to Deaths from All Causes.
		Phthisis.	Other Tuberculous Diseases	ALL TUBERCULOUS DISEASES.	ALL MIASMATIC DISEASES.	ALL CAUSES.	
ALL AGES,	1905 Av.	203	96	299	139	2618	1 : 9
	1900-1904	219	114	333	237	2812	1 : 8
Infant Period, 0—5 Years,	1905 Av.	8	46	54	90	904	1 : 17
	1900-1904	8	64	72	176	1002	1 : 14
School Period, 5—15 Years,	1905 Av.	12	31	43	6	108	1 : 3
	1900-1904	16	20	36	13	107	1 : 3
Adolescent Period, 15—25 Years,	1905 Av.	56	8	64	5	130	1 : 2
	1900-1904	61	14	75	8	153	1 : 2
Mature Period, 25—60 Years,	1905 Av.	119	10	129	18	636	1 : 5
	1900-1904	123	15	138	19	699	1 : 5
Post-Mature Period, 60 + Years,	1905 Av.	8	1	9	20	840	1 : 93
	1900-1904	11	1	12	21	851	1 : 71

circular has been remitted by the Public Health Committee to its executive officers, with a view to some scheme of action being formulated suitable to the needs of Aberdeen. Meanwhile a full and systematic inquiry is being made into the circumstances of practically all cases of phthisis among the dispensary and hospital patients in the city, for the purpose of ascertaining with some precision the state of matters. We hope in a short time to be able to submit a report to the Committee. Within the present year the subject has been brought under the notice of the Medico-Chirurgical Society by Dr. Lister, and a carefully considered scheme has been approved by the Society as likely to meet the wants of the city. The community is under a great obligation to Dr. Lister for his valuable help in this and other ways in stimulating a practical interest in this important question. The city is also greatly indebted to Lady Lumsden, who, having seen the reference in the last Annual Report to the need for a sanatorium for the poorer consumptives, very generously offered to contribute £1,000 towards its cost. For various reasons, it was found to be impossible to take advantage of this offer within the limited time specified, but we are not without hope of

again enlisting the practical support of Lady Lumsden in the event of a workable scheme being agreed upon.

I am sorry that little use is being made by medical practitioners of the leaflet or card of "Instructions for Preventing the spread of Consumption," referred to in the preceding Annual Report. It was intended for distribution to consumptive patients, and, with this object, a small supply was sent to each practitioner when it was first prepared, but practically nobody, except the Dispensary officers, has asked for a further supply. This may be due to the hesitation which many medical men feel in openly labelling a case of phthisis, especially in the earlier stages.

TABLE IX.—BACTERIOLOGICAL EXAMINATIONS,

made by Professor Hamilton, University of Aberdeen, under agreement with the Town Council.

YEAR.	SUSPECTED DISEASES.																		
	TYPHUS FEVER.				TYPHOID FEVER.				DIPHTHERIA.				TUBERCULOSIS.				OTHER DISEASES.	GRAND TOTAL.	
	Posi- tive.	Nega- tive.	Doubt- ful.	Total.	Posi- tive.	Nega- tive.	Doubt- ful.	Total.	Posi- tive.	Nega- tive.	Doubt- ful.	Total.	Posi- tive.	Nega- tive.	Doubt- ful.	Total.			
1905	93	214	0	307	8	76	0	84	104	124	0	228	83	182	0	265	1	885	
1904	17	95	0	112	160	162	0	322	83	154	0	237	7	688	
1903	24	105	1	130	180	150	0	330	60	95	0	155	4	619	
1902	31	79	1	111	162	131	3	296	67	128	0	195	3	605	
1901	139	58	2	199	104	172	7	283	61	81	0	142	9	633	
1900	108	48	6	162	74	95	4	173	37	64	0	101	4	440	
1899	152	37	6	195	92	127	13	232	32	52	0	84	3	514	

BACTERIOLOGICAL EXAMINATIONS.

(Table IX.)

In Table IX. is given a summary of the bacteriological examinations made in the Bacteriological Department of the University by Professor Hamilton and his special assistant, Dr. Laing, under the agreement with the Town Council. As the table shows, considerable use continues to be made, by medical practitioners, of the facilities offered.

During the year, 885 examinations were made of material from cases of disease, exclusive of a number of examinations of milk for tubercle, to which reference has already been made, and exclusive also of certain bacteriological tests of disinfectants and of some meat examinations. This is the largest number of examinations made in any year, but it includes 307 blood agglutination tests of the typhus cases treated in the City Hospital. Of the remaining 578 examinations, 84 were in cases of suspected typhoid fever, 228 in cases of diphtheria, and 265 were in cases of suspected tubercle, chiefly phthisis. Of course, in many cases repeated examinations were made, and account, for example, in diphtheria, for the number of positive results exceeding considerably the number of notified cases of the disease. Both typhoid fever and diphtheria exhibit a decline in the number of examinations, but this is due in the former

to the greatly reduced prevalence of typhoid during the year. The number of examinations for tubercle has been steadily increasing year by year. As an important aid in the more certain diagnosis of phthisis, and in the early recognition of the disease, still greater use by medical practitioners might advantageously be made of the bacteriological test.

Reference has been made in the account of the typhus epidemic to the special character of the series of blood agglutination tests that were undertaken. Some attempts were also made by my assistants, Dr. Mavor and Dr. Fraser, to discover and isolate the germ in a few of the cases, the blood and, in one case, the spinal fluid having been investigated by various modes of culture, but no definite results were reached. The pressure of their other duties was too heavy to permit of their being able to give the requisite time to an exhaustive investigation. Thus no anaerobic cultures were undertaken.

DISINFECTION AND DISINFECTANTS.

In the preceding Annual Report, I gave the results of a considerable number of interesting experiments that had been made for me by Dr. Laing, of the Bacteriological Department of the University, in order to ascertain the power, under certain conditions, of the most commonly used disinfectants and fumigants. As these experiments gave disinfecting values for two well-known disinfectants, Cyllin and Izal, that differed somewhat, especially in the case of Cyllin, from those claimed by their respective manufacturers, Dr. Laing, at my request, has repeated his experiments with these bodies, using the same method as described in his communication appended to my previous report, and attended by all the precautions now usually observed. The germs used were from vigorous growths, and consisted of the germ of typhoid (*B. typhosus*) and the *Staphylococcus pyogenes aureus*. Simultaneous and uniform tests were made with Izal and Cyllin, and, for purposes of comparison, with Phenol (carbolic acid). A new disinfectant of the cresylic type, known as Sapo-Cresol, was tested at the same time. The samples of Cyllin and Izal tested were not the same as in the previous year's experiments, but were taken from the current stock at the City Hospital. The stock tin was well shaken before the sample was withdrawn. The Cyllin had been procured prior to the recent announcement of a certain guarantee of efficiency by the makers. The period of incubation in each test was seven days, and the temperature was 37 deg. C. The results were as follows:—

IZAL.

(+ = growth ; — = no growth.)

BACILLUS TYPHOSUS.					STAPHYLOCOCCUS PYOG. AUR.					
Dilution of Disinfectant.	Time of Exposure to Disinfectant in Minutes.			Dilution of Disinfectant.	Time of Exposure to Disinfectant in Minutes.					
	5	10	15		5	10	15			
1—400	.	.	+	—	—	.	.	+	—	—
1—450	.	.	+	+	—	.	.	+	+	—
1—500	.	.	+	+	+	.	.	+	+	+

CYLLIN.

1—400	.	—	—	—		1—400	.	+	—	—
1—450	.	+	+	—		1—450	.	+	+	—
1—500	.	+	+	+		1—500	.	+	+	+

SAPO-CRESOL (RED CROSS).

1-750	.	.	+	—	—	1-400	.	.	—	—	—
1-800	.	.	+	+	—	1-500	.	.	+	+	—
1-850	.	.	+	+	+	1-600	.	.	+	+	+

PHENOL.

1-80	.	.	+	—	—	1-60	.	.	—	—	—
1-100	.	.	+	+	—	1-80	.	.	+	+	—
1-120	.	.	+	+	+	1-100	.	.	+	+	+

It will be observed that, as usual, somewhat different results were obtained with the different micro-organisms, Sapo-cresol, for example, being the most powerful germicide for the typhoid bacillus, while Izal was the most powerful for staphylococcus. It appeared from the previous series of experiments with other samples of the disinfectants that Izal was distinctly more powerful than Cyllin against all ordinary germs. With the more recent samples, they appear to be practically alike in potency against the typhoid bacillus, but Izal is rather more powerful against the staphylococcus. Since the purchase of the stock from which these samples were taken, the disinfecting efficiency of Cyllin is now stated to have been increased. It is probable, therefore, that Izal and Cyllin and the less-known Sapo-cresol possess much the same power as disinfectants.

A new disinfectant, Kerol, but apparently of the same chemical type as those tested, is at present being examined by Dr. Laing, and the results, so far, show that it is entitled to rank with Izal, Cyllin, and Sapo-cresol.

Tests were also made with certain coal-tar distillates, supplied, at our own request, by a large chemical work in the city, as also with microbene, but their disinfecting power was considerably under that of the substances named above.

The practical conclusion from these experiments and those made in the previous year, and already fully reported, is that a well-made disinfectant of the cresylic type, such as Cyllin, Izal, Sapo-cresol, or Kerol, is the best form of disinfectant known to us at present for general disinfecting work. These disinfectants are also now among the cheapest when regard is had to their power. Differing from such disinfectants as corrosive sublimate and carbolic acid, they are also practically non-poisonous. There is still, however, a useful place for formaldehyde or formaline, especially for fumigating purposes, as was shown at length in the preceding Annual Report.

COMPARISON WITH OTHER TOWNS.

A comparison is made in Table X., in respect of the birth, marriage, and death-rates during the year, between Aberdeen and seven other large towns in Scotland. The table summarises the comparisons made in my quarterly reports.

It shows that Aberdeen had the fourth highest *birth-rate* (29·3 per 1,000), Greenock, Glasgow, and Leith being higher. In the preceding year Aberdeen stood third, and in the year before it was second. The birth-rate, therefore, in Aberdeen seems to be declining more rapidly than in some of the other towns. The town with the lowest birth-rate during the last three years was Edinburgh, the rate last year being only 23·0.

TABLE X.—BIRTH, MARRIAGE, AND DEATH RATES DURING THE YEAR 1905.

PRINCIPAL TOWNS IN SCOTLAND.

	Glasgow.	Edin- burgh.	Dundee.	Aber- deen.	Paisley.	Leith	Greenock	Perth.
Estimated population	810	337	164	168	86	81	70	34
(in thousands).								
Birth Rate	30·0	23·0	28·1	29·3	27·6	29·9	30·6	24·1
(per 1000 of population).								
Marriage Rate.....	8·6	8·7	7·9	8·3	6·6	6·3	7·5	8·8
(per 1000 of population).								
Death Rate								
(per 1000 of population).								
(a) From all causes, and at every age	17·9	16·1	18·0	16·2	16·0	14·1	18·9	17·2
(b) From all causes, and under 5 years of age.....	52·7	43·1	49·3	44·4	42·0	33·9	55·6	42·6
(c) From zymoties (miasmatic) at every age	1·9	1·2	1·3	0·8	1·5	0·7	2·4	1·8
(d) From all causes, exclusive of zymoties (miasmatic) at every age	16·0	14·9	16·7	15·5	14·6	13·4	16·5	15·5

In respect of the *marriage-rate*, Aberdeen, last year, occupied the fourth highest place, with a rate of 8·3 per 1,000, Perth, Edinburgh, and Glasgow being higher. The lowest rate was in Leith, with 6·3. In the preceding year Aberdeen occupied the highest place.

As regards the *death-rate* from all causes and at all ages, Aberdeen had the fourth lowest rate (16·2 per 1,000). The three lower rates were in Leith (14·1), in Paisley (16·0), and in Edinburgh (16·1). The highest rate was in Greenock, with 18·9. In the preceding year, Aberdeen occupied the third place, Leith and Edinburgh having lower rates. Among children under five years of age, Aberdeen had the fifth lowest rate (44·4), Leith, Paisley, Perth, and Edinburgh being lower. The highest rate was in Greenock (55·6). From miasmatic diseases at all ages, the death-rate in Aberdeen (0·8) was the second lowest, Leith alone being lower (0·7). The highest was in Greenock (2·4). From all causes, excluding miasmatics, the rate in Aberdeen (15·5) was the fourth lowest, Leith, Paisley, and Edinburgh being lower. The highest was in Dundee (16·7).

HOUSING OF THE WORKING CLASSES.

Early in the year, 16 houses in Scott's Court, Regent Quay, and practically forming the whole of the Court, were closed by an order of the Town Council, under the Aberdeen Corporation Act, 1881, on a report from the Sanitary Inspector and myself. This court forms one of the last of the genuinely slum courts of the city. The houses were all more or less dilapidated and defectively lighted, and some suffered from dampness.

Also early in the year, the Town Council, on a report from the Sanitary Inspector and myself, ordered the demolition of a house at the rear of No. 37, East North Street. This house had been closed more than a year previously, as unfit for human habitation, by an order under

the Aberdeen Corporation Act, 1881. As nothing had been done meanwhile to render the house fit for human habitation, and as, in any case, the house was in too great proximity to adjacent houses, interfering with their light and air-space, the Council resolved to take action under the Aberdeen Police and Improvement Act, 1900, in which power was given for the demolition of uninhabitable buildings, similar to the power contained in the Housing of the Working Classes Act, but applicable to houses closed by the Corporation under their own Act of 1881. The power of demolition contained in the Housing of the Working Classes Act is available only for houses closed under the Public Health Act. Some objections were made by the proprietors, but these were over-ruled by the Council. No appeal was taken.

The principal improvement, in respect of housing, undertaken during the year, was the demolition of a congested area of old houses, with narrow and ill-lighted courts, on the east side of the Gallowgate. The clearance has been carried out under the City Improvements Act of 1904. The area measures about two and a quarter acres, of which, it is satisfactory to note, three-quarters of an acre are to be retained as a recreation ground. This will provide a much-needed open space in the heart of one of the most populous parts of the city.

The houses in the Fishers' Squares still continue to be without adequate sink and water-closet accommodation. No other houses in the city are so defective in this respect. As has been repeatedly stated before, the chief difficulty in taking action is due to the fact that the houses, which are of a working-class character, are mostly owned by the occupiers, who are mainly persons of very limited means. It seems to be impossible for many of them, therefore, to meet the expenditure required to provide the necessary sanitary accommodation.

The Corporation Lodging-House continues, financially, in the satisfactory condition which it has attained during the last few years, there being a surplus of income over expenditure and interest on loans.

WORKSHOPS.

(Table XI.)

The number of workshops registered at the end of the year was 1,178, as against 1,233 at the end of the preceding year.

The following tabular summary of the work done during the year, by the Sanitary Staff, in the inspection and regulation of factories and workshops, has been prepared in accordance with the requirements of the Secretary of State.

It ought to be noted that in the list of workshops the numbers relate to workshops solely, as legally defined in the Factory and Workshop Acts, and do not include factories—*e.g.*, the number of bakehouses in the list is stated as 28, but the total number of bakehouses, including those which, on account of employing motive power, are termed factories, was 61.

TABLE XI — FACTORIES, WORKSHOPS, LAUNDRIES, WORKPLACES, AND HOMEWORK.

1.—INSPECTION.				
Premises.	No. of Inspections.	No. of Written Notices.	No. of Prosecutions.	
Factories (including Factory Laundries),	546	108	—	
Workshops (including Workshop Laundries),	1,440	207	—	
Workplaces,	56	4	—	
Homeworkers' Premises,	92	0	—	
Total,	2,134	319	—	

2.—DEFECTS FOUND.				
Particulars.	Number of Defects.			Number of Prosecutions.
	Found	Remedied	Referred to H.M. Inspector.	
<i>Nuisances under the Public Health Acts :—</i>				
Want of cleanliness,	148	118	—	—
Want of ventilation,	22	25	—	—
Overcrowding,	4	3	—	—
Want of drainage of floors,	—	—	—	—
Other nuisances,	88	61	—	—
Sanitary accommodation {	insufficient,	16	10	—
	unsuitable or defective,	16	12	—
	not separate for sexes,	3	2	—
<i>Offences under the Factory and Workshop Act :—</i>				
Illegal occupation of underground bakehouse (S. 101),	—	—	—	—
Breach of special sanitary requirements for bakehouses SS. 97 to 100),	—	—	—	—
Failure as regard lists of outworkers (S. 107),	—	—	—	—
Giving out work to be done { unwholesome (S. 108),	—	—	—	—
in premises which are { infected (S. 110),	—	—	—	—
Allowing wearing apparel to be made in premises infected by scarlet fever or smallpox (S. 109),	—	—	—	—
Other offences,	—	—	—	—
Total,	297	231	—	—

3.—OTHER MATTERS.		
Class.	Number.	
<i>Matters notified to H. M. Inspectors of Factories :—</i>		
Failure to affix Abstract of the Factory and Workshop Act (S. 133),	27	
Action taken in matters referred by H.M. Inspectors { as remediable under the Public Health Acts, but not under the Factory Act (S. 5)	Notified by H.M. Inspector,	8
	Reports (of action taken) sent to H.M. Inspectors,	8
Other	0	
<i>Underground Bakehouses (S. 101) :—</i>		
Certificates granted during the year,	0	
In use at the end of the year,	10	

*Homework :—**Lists of Outworkers (S. 107) :—*

	No. of Lists.	No. of Outworkers.
Lists received,	11	112
Addresses of outworkers {forwarded to other Authorities,	6	
{received from other Authorities,	0	

Homework in unwholesome or infected premises :—

	Wearing Apparel	Other.
Notices prohibiting homework in unwholesome premises (S. 108),	—	—
Cases of infectious disease notified in homeworkers' premises,	—	—
Orders prohibiting homework in infected premises (S. 110),	—	—

Workshops on the Register (S. 131) at the end of 1905 :—

Bakehouses,	28	Milliners,	59
Blacksmiths,	40	Painters,	47
Cabinetmakers,	32	Plumbers,	32
Coopers,	30	Stonecutters,	35
Dress and Mantle Makers,	121	Tailors,	132
Fisheurs,	89	Other workshops,	492
Joiners,	41	Total No. of workshops on Register,	1,178

Much valuable work continues to be done by the Sanitary Inspector and his staff in bringing the workshops of the city into accordance with the latest requirements, and in keeping them in good sanitary condition. It is satisfactory to find that the occupiers of the workshops, on the whole, comply fairly readily with the demands made, and that in no case during the year was there occasion for prosecution by the Local Authority. The principal structural defects have lain in insufficient water-closet accommodation, or in the lack of the requisite disconnection between the workshop and the closet, as now required. Nearly all these defects have now been remedied, and few workshops remain which are not in accordance with the demands of recent Acts and Orders. The principal nuisance dealt with by the Sanitary Inspector in workshops was want of cleanliness, but there were also several workshops—in all, 22—in which the ventilation was defective. I drew attention in the report of last year to the great importance of good ventilation in workshops as well as in dwelling-houses, and have already alluded to it in an earlier part of the present report. The complaints as to want of cleanliness related mostly to insufficient lime-washing and the like, and not to actual accumulations of dust or dirt. At the same time, there is room for improvement in some workshops in regard to cleanliness. Wherever dust is allowed to accumulate in occupied places, there is a real risk of the dust being mixed with disease-producing germs. This is believed to be notably the case with the germs of consumption. Thorough cleanliness is, therefore, essential in workshops, especially in such workshops as, from the nature of the work, readily permits of habits of cleanliness being practised. Where men are employed in workrooms, it is desirable that a notice should be affixed prohibiting spitting. Where any considerable number of men is brought together, there is a great probability of some of them suffering from phthisis, and the spit of such men on a floor may, when dried, rise as dust into the air and infect previously healthy workmen. It is satisfactory to observe that some masters are now giving heed to this desirable requirement.

BAKEHOUSES.—The bakehouses were, as usual, inspected every quarter during the year, and were found, as a rule, to be in a satisfactory condition. There is still some need for the exercise of greater cleanliness in several of the bakehouses, especially in regard to the floors and walls. Several notices for the lime-washing of bakehouses were issued during the year by the Sanitary Inspector, as also some notices for the cleaning of floors; but such notices ought to be unnecessary in a business, the sole object of which is the preparation of human food, if the occupiers were possessed of a sufficient sense of the duty they owe to their customers. It is only fair to say that some of the bakehouses are admirably kept. Two new bakehouses were registered during the year. Both were small, and worked in only by the occupier. A third bakehouse, which had been for some time closed, was reopened. Six bakehouses, all of them small, ceased to be occupied in the course of the year.

A considerable addition was made to the largest bakehouse in the city, and was carried out with due attention to modern sanitary requirements. The plan was previously submitted to the Sanitary Inspector and myself, and we experienced, as usual, no difficulty in obtaining compliance with every reasonable suggestion for the sanitary improvement of the building.

DAIRIES.—Reference has already been made to the importance of the thorough inspection of the dairies providing the city with its milk supply. The only dairies at present inspected by the Corporation are those within the city boundaries. A marked improvement has taken place within recent years in their condition, owing chiefly to the high standard set up in the dairy regulations, and to the steady enforcement of the regulations by the Sanitary Department. It is particularly satisfactory to observe the increased attention now given to the cleanliness of the byres and of the cows. The services of the Veterinary Inspector continue to be of great value in eliminating any diseased animals from the dairy herds. The dairymen have always shown themselves amenable to his advice, and no formal coercion has been found to be necessary.

Owing to the existence of a large area of agricultural land within the city boundary, there is a considerable number of dairy farms so situated as to be outside the range of the public water supply, and obliged, therefore, to depend on a private supply. This is almost invariably obtained from a gravel well, of varying depth, in a field near to the farm-house. These supplies have been receiving much attention for a number of years, and may be said to have now reached a satisfactory and reliable condition. In order to protect the well from the risk of manurial pollution from the adjacent cultivated ground, the Sanitary Inspector and myself have for some years been making a practice of insisting on the built lining of the well being carried some inches above the level of the surrounding ground, and properly covered by stone flags, and on the outside of the well being puddled to a depth of eight or ten feet from the surface with a six-inch coating of good clay. We assume that any surface water that may reach the well through the depth of soil behind the clay will be sufficiently deprived of its germs as to be innocuous.

Reference has already been made in the present report to the examination of a number of samples of milk for the presence of the tubercular germ. It is of interest to state that in the two instances—one certain and the other doubtful—where tuberculosis followed in the inoculated animals, the milk was not the product of a city dairy.

INSPECTION OF PLANS.—As usual, a considerable number of plans of workshops and factories, especially those in which food stuffs are prepared, or in which there is any apprehension of nuisance, were examined and reported on by the Sanitary Inspector and myself,

under an arrangement with the Burgh Surveyor, to whose department the inspection of all plans primarily falls. Thus eleven plans for the erection, or extension, or alteration of workshops and factories were reported on, exclusive of the plans of premises in which offensive trades, as defined by the Public Health Act, are conducted. In the previous year, the number of plans examined was 17, and, in 1903, there were 32. The bulk of the plans, as in previous years, related to fish-curing and provision-curing works, and all the recommendations made by us were given effect to. They chiefly related to improvements in lighting and ventilation, to the paving of floors, and the provision of sufficient water-closet accommodation.

OFFENSIVE TRADES.

The offensive trades in Aberdeen, within the meaning of the Public Health Act, are concerned chiefly with tallow melting or oil extracting (from ox bones or fish livers), soap boiling, slaughtering, hide factoring, and the manufacture of manures. Few complaints were received regarding any of these trades during the year, and none were of a serious character. Such as were made, on being brought to the notice of the owners of the works, were at once attended to. The town, as compared with many industrial towns elsewhere, is now remarkably free from disagreeable emanations from offensive trades. This is largely due to the pressure which has been exercised from time to time by this Department upon the owners of the works, with a view to their adopting every reasonable means for preventing such emanations. It is also due to the readiness and intelligence which most of the owners have shown in adopting means for reducing any nuisance. No applications were made to the Town Council during the year, under Section 32 of the Public Health Act, for sanction to establish businesses coming under the list of offensive trades, as defined in the Act. Several applications were, however, received for the extension or alteration of certain premises in which such business was already being carried on, but these applications related exclusively to slaughter-houses.

SLAUGHTER-HOUSES.—As the result of the new bye-laws passed in the preceeding year, considerable alterations had to be undertaken in all the slaughter-houses in order to bring them into conformity with the requirements of the regulations. At the beginning of the year, there were 9 slaughter-houses in the city; but one, of small size, was voluntarily closed during the year, mainly because of the new requirements. For 6 out of the remaining 8 slaughter-houses, plans were submitted by the several owners, showing how it was proposed to comply with the bye-laws. Nearly all the plans showed more or less extension, in addition to the necessary alteration of the premises. The plans included the two largest slaughter-houses in the city, viz., Wales Street Slaughter-house, belonging to the Fleshers' Incorporation, and West Hutcheon Street Slaughter-house, owned privately. The plan for the former slaughter-house, which embraced a large extension of the premises, was approved with much reluctance by the Public Health Committee, because of the situation of the slaughter-house in the heart of a populous part of the town, but the slaughter-house was of substantial construction and well conducted, and had long occupied its present site. The Town Council, after having heard certain objections by the Trades Council, resolved to grant the necessary sanction. The plan for the Hutcheon Street Slaughter-house involved a complete reconstruction of the premises on modern lines, and, after adjustment, was sanctioned by the Town Council. In this case, no objection by any member of the public was offered. Neither plan has, however,

been carried out, the Fleshers' Incorporation having, within the present year, arranged for the purchase of the existing Hutcheon Street Slaughter-house, with a view to reconstructing it on a plan of their own, and enlarging it to the fullest possible extent, and abandoning their present slaughter-house in Wales Street. When this arrangement is carried out, the whole of the slaughtering hitherto done in the two slaughter-houses will be concentrated in the new slaughter-house at Hutcheon Street. The plan for this slaughter-house was approved early in the present year. The site of the slaughter-house is not an ideal one, on account of its proximity to houses, but it is more suitable for the purpose than Wales Street, and is conveniently near to most of the auction marts. Since such important structural changes have been found to be necessary by the principal slaughterers in the city, one is naturally disposed to regret once more that the Town Council, at an earlier stage, did not see its way to adopt the only permanent and satisfactory solution of the problem of slaughtering in the city by erecting a public slaughter-house. It is, however, consoling that the bulk of the slaughtering will now be carried on within one large slaughter-house, and that the Fleshers' Incorporation, who own the slaughter-house, have expressed their willingness to provide every facility for its proper sanitary inspection and supervision.

With regard to the remaining four slaughter-houses, the plans were, in each case, approved, after certain adjustments, and have since been carried out. This still leaves two slaughter-houses, both small, and situated in Woodside, in which practically no steps have been taken as yet to bring them into conformity with the new bye-laws. Pressure has been brought to bear repeatedly on the owners of these two slaughter-houses, with a view to their carrying out the necessary alterations, but an apparent lack of means in one case, and the proposal of a new street in the other, have, so far, prevented the work being done.

WATER SUPPLY.

I have felt it to be my duty, for several years, to direct attention in these reports to the unsatisfactory condition of the water supply of the city. There is, perhaps, less occasion to do this at the present time, as the Water Committee of the Town Council has been actively inquiring into the matter during the past twelve months, and has had under consideration several proposals for improving the supply or obtaining a new supply. It is to be hoped that, in the interests of the public health, these inquiries and deliberations may result before long in definite action being taken. Except for a somewhat high proportion of organic matter, which appears to be mainly of peaty origin and is greatest in times of flood, and apart from any pollution to which the river is exposed, the water of the Dee is of considerable natural purity, and contains an unusually small proportion of dissolved mineral constituents. This is due to the insoluble character of the rocks and soil composing the watershed of the Dee. The water is, accordingly, almost as soft as rain-water, and could not be excelled for washing and for ordinary industrial purposes. In common with all river waters, it is liable to become slightly turbid after heavy rains, and yields on standing a perceptible yellowish-green or greyish deposit, consisting of mineral matter and vegetable debris. Complaints are frequently made of the turbidity or deposit, and, for this reason alone, filtration is desirable. The main objection to the water supply lies in the fact that the river, above the point of intake, descends for many miles through a populated and more or less cultivated valley, and is open to contamination from the sewage of certain towns and villages and of numerous residences and farm steadings, as also, in times of storm, from the drainage of manured fields in

process of cultivation. Much has been done in recent years, at the instance of the Town Council, to reduce the pollution from these sources, and especially in arranging for sewage farms being established in connection with the towns and villages. Some of these were laid out several years ago, and others have only now been completed. In the case of farm-houses and isolated residences, some have been provided with definite arrangements, such as cess-pools and septic tanks and filters for intercepting and more or less purifying the sewage, while others are without such arrangements. In the case of arable fields, liable to manuring, no means can very well be taken to prevent contamination from them. The Burgh Surveyor, acting for the Water Committee of the Town Council, has been endeavouring for several years to secure that some means of purification should be employed at all sources of pollution. The task is, however, a difficult one, especially in relation to the smaller residences and to farm-houses. But even were he in a position to report that some method of purification had everywhere been introduced, the question would still remain as to whether these means could be safely relied upon to prevent the river becoming dangerously polluted. No authority, so far as I know, would venture to answer this question in the affirmative, and that for two reasons. In the first place, the usual and practicable methods of sewage purification, while they may remove all the ordinary solid matter and greatly reduce the proportion of dissolved organic matter, do not remove all the really dangerous elements, namely, the germs. By some methods, as, for example, by the use of a cess-pool, the germs may be increased rather than diminished; and the effluent from sewage farms is often rich in germs. No one can maintain that the effluent from such a farm, although greatly improved in appearance as contrasted with the original sewage, may be safely drunk. The reports of the Royal Commission on Sewage Disposal are conclusive on this point. In the second place, even were the methods more perfect than they are, they require constant and intelligent supervision to keep them working at their best. The most modern and apparently perfect installation for purification may be introduced, and appear for the time to serve its purpose, but a few months later it may be found, because of insufficient attention or complete neglect, to be itself a source of additional pollution instead of a means of purification. This Professor Hamilton and I found to be the case at more than one place on Deeside, as we stated in a report recently submitted to the Water Committee. The owners of such installations have usually no personal interest to serve in maintaining them in good order, and, accordingly, give them but slight attention. It, therefore, follows that, even if every source of pollution were being subjected to available methods of purification, the city would not be free from the risk of contamination of its water supply to a dangerous degree, especially under certain favouring circumstances. Such circumstances might arise in an epidemic of typhoid fever or the occurrence of cholera at some point in Deeside—not an impossibility in view of the ease with which a large milk-borne epidemic may proceed from a single neglected case of the disease at a dairy farm, or in view of the repeated appearance of cholera in quite recent times in European countries. The small prevalence of typhoid in the city during the last few years is very gratifying, and tends naturally to diminish the apprehensions of the citizens in regard to the purity of the water supply. But so long as the river from which the water is taken is daily receiving unpurified or partially purified sewage from human dwellings, or from fields manured with the contents of middens, so long is there the possibility at some time or other—it may be remote, or it may be very near—of the occurrence of an epidemic of some water-borne disease within the city. Other towns, in which such

epidemics have happened, have gone on for years without any premonition, as in an increasing typhoid prevalence, when suddenly they were overwhelmed by a large and devastating epidemic. Even if the experience in Aberdeen thus far seems to show that the risk is small, the results would be so disastrous and lamentable in the event of the occurrence of a water-borne epidemic, distributed as it would be over the whole city, and affecting all classes and ages, that every reasonable and practicable step should be taken to prevent its possibility. It is satisfactory to be able to report that the Town Council, moved by considerations such as these, and, acting on a report from its Water Committee, resolved in October of last year to obtain a new water supply for the city from the River Avon, at a point above all possibility of sewage or manurial contamination. If this scheme, which is estimated to cost £835,000, is carried out, there can be no doubt that Aberdeen would then be provided with one of the purest public water supplies in the kingdom. Meanwhile some delay has arisen in the further prosecution of the scheme, and a proposal to filter the present supply has again been under consideration. The ideal scheme is, of course, the one already approved by the Council; but if the financial and other difficulties are felt to be too great, there should be no delay in carrying out an adequate scheme of filtration of the existing supply, which would go a long way towards improving the water bacteriologically, and would almost entirely prevent turbidity and deposit.

SEWERAGE.

The large scheme for carrying the great bulk of the sewerage of the city, by the Bay of Nigg, to Girdleness is now completed; and the subordinate, but also costly, scheme for conveying the sewage of the Woodside district into the general drainage of the city is now in course of being carried out. As the Woodside sewage has hitherto been discharged into the Don, this scheme will tend to diminish the present gross pollution of the river; but I doubt if it will produce any very visible effect. From daily observation of the river during the summer months, I am satisfied that the bulk—perhaps, as much as nine-tenths—of the pollution proceeds from the large mills, chiefly the paper-works, within a few miles of the estuary. Thus on a Sunday and on a Saturday afternoon, when the works are usually closed, the river water becomes to the eye almost perfectly clear, while for the rest of the week it is coloured and frothy and so laden with suspended solid organic matter—evidently debris from the paper mills—that it has lost practically all its transparency. In hot weather, the smell of the decaying organic matter is often very offensive, especially within the tidal part of the river. Since the city is now doing its duty in removing its share of the pollution, it need have less hesitation in bringing all possible pressure to bear on the proprietors of the mills. Until this pressure has had its full effect and a complete system of purification has been introduced, there is no reason why, in the meantime, by the use of simple filter-beds, at no great cost, the whole of the suspended matter should not be removed from the mill effluents. This would be a great step towards improving the sightliness of a river, which, if restored to something of its natural condition, would form one of the most charming possessions of Aberdeen.

CITY HOSPITAL.

(Table XII.)

No additions were made to the buildings of the Hospital during the year. The question of rebuilding in stone the present wooden pavilion for small-pox was under the consideration

TABLE XII

CITY HOSPITAL.—ANNUAL SUMMARY, 1905.

ZYMOTIC ADMISSIONS AND DEATHS DURING EACH YEAR FROM 1895 TO 1905 INCLUSIVE.

DISEASE.		1905	1904	1903	1902	1901	1900	1899	1898	1897	1896	1895	1895-1904.	
													Total	Annual Average
Small Pox,	Admitted, ...	0	3	0	0	7	0	2	0	0	0	1	13	1·3
	Died, ...	0	0	0	0	1	0	0	0	0	0	0	1	0·1
	Percent. of Deaths to Admissions, ...	0	0	0	0	14·7	0	0	0	0	0	0	...	7·7
Measles, ...	Admitted, ...	6	72	78	156	133	342	191	194	129	266	40	1601	160·1
	Died, ...	0	1	9	3	4	9	4	7	0	4	0	41	4·1
	Percent. of Deaths to Admissions, ...	0	1·4	11·5	1·9	3·0	2·6	2·1	3·6	0	1·5	0	...	2·6
Scarlet Fever, ...	Admitted, ...	185	534	408	278	340	280	343	920	842	1181	456	5582	558·2
	Died, ...	7	16	9	8	5	7	16	28	16	29	17	151	15·1
	Percent. of Deaths to Admissions, ...	3·8	3·0	2·2	2·9	1·5	2·5	4·7	3·0	1·9	2·5	3·7	...	2·7
Diphtheria,	Admitted, ...	127	131	120	107	101	82	78	79	26	35	20	779	77·9
	Died, ...	7	9	8	8	5	6	8	4	2	2	2	54	5·4
	Percent. of Deaths to Admissions, ...	5·5	6·9	6·7	7·5	4·9	7·3	10·3	5·0	7·7	5·7	10·0	...	6·9
†Typhoid Fever, ...	Admitted, ...	13	24	22	28	70	26	35	18	0	0	8	231	23·1
	Died, ...	3	2	0	1	1	2	6	2	0	0	1	15	1·5
	Percent. of Deaths to Admissions, ...	23·1	8·3	0	3·6	1·4	7·7	17·1	11·0	0	0	12·5	...	6·5
Typhus Fever, ...	Admitted, ...	97	22	0	0	0	0	5	5	0	0	0	32	3·2
	Died, ...	12	1	0	0	0	0	0	2	0	0	0	3	0·3
	Percent. of Deaths to Admissions, ...	12·4	4·5	0	0	0	0	0	40·0	0	0	0	...	9·4
Other Zymotics,	Admitted, ...	12	29	17	32	18	14	10	12	4	1	2	139	13·9
	Died, ...	2	4	2	3	1	2	1	1	0	0	0	14	1·4
	Percent. of Deaths to Admissions, ...	16·7	13·8	11·8	9·4	5·6	14·3	10·0	8·3	0	0	0	...	10·1
Total Zymotics,	Admitted, ...	440	815	645	601	669	744	664	1228	1001	1483	527	8377	837·7
	Died, ...	31	33	28	23	17	26	35	44	18	35	20	279	27·9
	Percent. of Deaths to Admissions, ...	7·1	4·0	4·3	3·8	2·5	3·5	5·3	3·6	1·8	2·4	3·8	...	3·3
Quarantine,	Admitted, ...	181	25	14	6	43	18	22	34	16	23	15	216	21·6
	Died, ...	6	3	3	0	0	0	0	0	1	1	2	10	1·0
	Percent. of Deaths to Admissions, ...	3·3	12·0	21·4	0	0	0	0	0	6·2	4·3	13·3	...	4·6

† Prior to 1899, the cases of Typhoid Fever were mostly removed to the Royal Infirmary or Sick Children's Hospital for treatment.

of the Public Health Committee, but it was eventually resolved to retain the present pavilion, and to carry out a considerable replacement of the basement timbers, in which dry-rot had extensively developed.

The number of admissions (621) was about three-fourths of the average (859) in the preceding ten years. This was due to the absence of any large epidemic. But for the occurrence of the typhus outbreak, the admissions would have been considerably under half the average, and much fewer than in any year of the preceding decennium. It was fortunate that there was thus sufficient space for providing satisfactorily for the typhus patients and the typhus contacts. At one time there were as many as 66 such contacts in the hospital, necessitating the occupation of two of the four main pavilions, as the Hospital has not any Reception House attached. The absence of special accommodation for contacts is, as I have previously pointed out, an important defect, although, so far, owing to fortunate combinations of circumstances, it has not given rise to serious inconvenience.

The accompanying table gives a summary of all the cases admitted during the year, together with a corresponding summary for each of the preceding ten years. It shows that, in spite of the prevalence of scarlet fever in the city being unusually low, this disease, as usual, contributed the largest quota of patients to the hospital. In all, 185 cases of scarlet fever were admitted—a number greatly under the average. Diphtheria came next, with 127 cases. This number was, however, considerably above the average. Then followed typhus, with 97 cases, exclusive of about 170 contacts. Finally, followed typhoid fever, with 13 cases (the smallest number since the Royal Infirmary ceased to admit the bulk of the cases), and measles, with 6 cases—by far the smallest number for many years.

The proportion of notified or discovered cases admitted to the City Hospital, or other public hospital, was—for scarlet fever, 86 per cent.; for diphtheria, 77 per cent.; measles, 2 per cent.; typhoid fever, 70 per cent.; and typhus, 99 per cent. Some of these proportions are lower than usual, owing to the demands on the hospital space during the typhus epidemic.

The case-mortality among the scarlet fever cases admitted to hospital was 3·8 per cent., which is above the average (2·7) for the preceding ten years. The case mortality among the diphtheria cases was 5·5, which is under the average (6·9); in the ten years ending 1895, the case-mortality averaged 15·9. I believe the great drop since that time to be due largely, if not entirely, to the use of antitoxin. The mortality from this disease would fall still lower, if only the cases were sent sooner to the hospital, or treated earlier at home with antitoxin. There were no deaths among the measles cases, but the cases were very few. The case-mortality among the typhoid cases was unusually high, viz., 23 per cent.; the cases here also were few. The case-mortality among the typhus cases was 12 per cent. With one exception, and there the illness was obscure in character, the deaths were confined to the adult patients.

MATTHEW HAY, M.D.,

Medical Officer of Health.

ABERDEEN, 13th December, 1906.



